

SRS INSTITUTE OF AGRICULTURE AND TECHNOLOGY

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Theory Notes

AEC 102 Fundamentals of Agricultural Economics (1+1)

Lecture 1: Economics: Meaning, Scope & Subject matter, Definitions, Approaches to economic analysis, Micro and Macro Economics, Positive & Normative analysis.

ECONOMICS

Economics is popularly known as the **“Queen of Social Sciences”**. It studies the economic activities of a man living in a society. Economic activities are those activities concerned with the efficient use of scarce means that can satisfy the wants of man. After the basic needs viz., food, shelter and clothing have been satisfied, the priorities shift towards other wants. **Human wants are unlimited**, in the sense, that as soon as one want is satisfied another crops up. Most of the means of satisfying these wants are limited because their supply is less than demand. These means have alternative uses; there emerges a problem of choice. Resources being scarce in nature ought to be utilized productively within the available means to derive maximum satisfaction. **The knowledge of economics guides us in making effective decisions.** The subject matter of economics is concerned with,

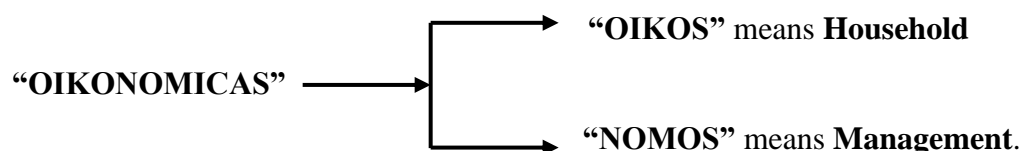


In other words, it deals with decisions regarding the commodities and services to be produced in the economy, how to produce them most economically and how to provide for the growth of the economy.

Adam Smith – “Father of Economics”

Definitions of ECONOMICS

The word economics has been derived from the **Greek Word - “OIKONOMICAS”**



It is understood that the beginning was made by the Greek Philosopher – **Aristotle** who in his book “**Economica**” focused that the field of economics dealing with “**Household Management**”. “**Kautilya**”, the great Indian statesman, named his book on state crafts ‘**Arthashastra**’. The economists in defining the term, economics followed several approaches and concepts. The concepts on which various definitions of economics are given

are **1. Wealth 2. Welfare 3. Scarcity 4. Growth.**

1. WEALTH - Definition of Economics:

Adam Smith defined Economics as “**An inquiry into the nature and causes of the wealth of nations**” in his book, entitled ‘**Wealth of Nations**’.

Criticism: Smith defined economics only in terms of wealth and not in terms of human welfare. **Ruskin and Carlyle** condemned economics as a ‘**dismal science**, as it taught selfishness which was against ethics. However, now, wealth is considered only to be a means to an end, the end being human welfare. Hence, the wealth definition was rejected and the emphasis was shifted from ‘wealth’ to ‘welfare’.

2. WELFARE - Definition of Economics:

Alfred Marshall in his book “**Principles of Economics**” defined “Political Economy or “**Economics as a study of mankind in the ordinary business of life**”, it examines that part of individual and social action that is most closely connected with the attainment and with the use of the material requisites of well- being. Thus, it is on the one side a study of wealth, and on the other, and more important side, a part of the study of man.

Criticism: Marshall considered only material things. But immaterial things, such as the services of a doctor, a teacher, and so on, also promote the welfare of the people.

Marshall makes a distinction between (i) those things that are capable of promoting the welfare of people and (ii) those things that are not capable of promoting the welfare of people. But anything, (E.g.) liquor, that is not capable of promoting welfare but commands a price, comes under the purview of economics.

Marshall's definition is based on the concept of welfare. But there is no clear-cut definition of welfare. The meaning of welfare varies from person to person, country to country, and from one period to another. However, generally, welfare means the happiness or comfortable living conditions of an individual or group of people. The welfare of an individual or nation is dependent not only on the stock of wealth possessed but also on the political, social, and cultural activities of the nation.

3. SCARCITY - Definition of Economics:

“Lionel Robbins” formulated his conception of Economics based on the scarcity concept. **“Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses.**

Criticism: Robbins does not make any distinction between goods conducive to human welfare and goods that are not conducive to human welfare. In the production of rice and alcoholic drink, scarce resources are used. But the production of rice promotes human welfare while the production of alcoholic drinks is not conducive to human welfare. However, Robbins concludes that economics is neutral between ends.

In economics, we not only study the microeconomic aspects like how resources are allocated and how price is determined, but we also study the macroeconomics aspect like how national income is generated. But Robbins has reduced economics merely to the theory of resource allocation.

Robbin's definition does not cover the theory of economic growth and development.

John Maynard Keynes - Father of Modern Economics.

4. GROWTH - Definition of Economics:

John Maynard Keynes defined economics as **“The study of the administration of scarce resources and the determinants of employment and income”**. In the words of Nobel prize winner Prof. Samuelson, “Economics is the study of how people and society end up choosing with or without the use of money, to employ scarce productive resources

that could have alternative uses, it produces various commodities over time and distributes them for consumption, now or in the future, among various persons and groups in society. It analyses costs and benefits of improving patterns of resources allocation.”

Scope of Economics

‘Scope’ means the sphere of study. We have to consider what economics studies and what lies beyond it. The scope of economics will be brought out by discussing the following.

- a) Subject matter of economics.
- b) Economics is a social science.
- c) Whether Economics is a science or an art?
- d) If Economics is science, whether it is positive science or normative science?

a) Subject – a matter of economics:

Economics studies man’s life and work, not the whole of it, but only one aspect of it. It does not study how a person is born, how he grows up and dies, or how the human body is made up and functions, all these are concerned with biological sciences, Similarly Economics is also not concerned with how a person thinks and the human organizations being these are a matter of psychology and political science. **Economics only tells us how a man utilizes his limited resources for the satisfaction of his unlimited wants**, a man has a limited amount of money and time, but his wants are unlimited. He must so spend the money and time he has so that he derives maximum satisfaction. This is the subject matter of Economics.

Divisions of Economics

The subject matter of economics can be explained under two approaches viz.,

1. Traditional approach

2. Modern approach.

Traditional Approach

Traditionally, the subject matter of economics can be studied under four divisions. These are Consumption, Production, Exchange, and Distribution

1. Consumption - Destruction of utility:

It means the use of wealth to satisfy human wants. It also means the **Destruction of utility** or the use of commodities and services to satisfy human wants.

2. Production - Creation of utility:

It involves the processes and methods employed in the transformation of tangible inputs (raw materials, semi-finished goods, or subassemblies) and intangible inputs (ideas, information, know-how) into goods or services.

3. Exchange:

It implies the transfer of goods from one person to the other. It may occur among individuals, countries, markets, regions, and so on. The exchange of goods leads to an increase in the welfare of individuals through the creation of higher utilities for goods and services.

4. Distribution:

It refers to the sharing of wealth produced by the community among the agents of production. Proper distribution of wealth and resources leads to the growth and economic welfare of the people in the nation.

Modern Approach:

This approach divides the subject matter of economics into two divisions i.e., Microeconomics and Macroeconomics. The terms '**Micro**' and '**Macroeconomics**' were first coined and used by "**Ragnar Frisch**" in 1933.

1. Micro-Economics - Price Theory:

The term 'microeconomics' is derived from the **Greek** word '**Micros**' which means **small or a millionth part**. It is also known as "**price theory**". It is an analysis of the behavior of small decision-making units, such as a firm, an industry, a consumer, etc. It studies only employment in a firm or an industry. It also studies the flow of economic resources or factors of production from the resource owners to business firms and the flow of goods and services from the business firms to households. It studies the composition of such flows and how the prices of goods and services in the flow are determined.

Microeconomics covers the theory of consumer behavior, the theory of value, and the theory of economic welfare. Microeconomics is somewhat abstract because it cannot include all the economic activity of the real world.

2. Macro-Economics – Income Theory:

The term “macroeconomics” is derived from the Greek word “**Macros**”, which means “**large**”. It treats the economic system as a whole, rather than treating the individual economic units of which it is composed, Macroeconomics is concerned with the value of the overflow of goods and the value of the overflow of resources. **Thus, it covers, the theory of income and total employment, the theory of money and prices, banking, the theory of economic growth, policy formulation, total output, total consumption, aggregate demand, aggregate supply, etc.** Macroeconomics is concerned with the **study of aggregate.**

Though a distinction exists between microeconomics and macroeconomics, both are essential for a thorough understanding of the economy.

Economic Activity: If we look around, we see the farmer tilling his field, a worker working in a factory, a doctor attending to the patients, a teacher teaching his students, and so on. They are all engaged in what is called “Economic Activity”. They earn money and purchase goods. Neither money nor goods are an end in itself. They are needed for the satisfaction of human wants and to promote human welfare. To fulfill their wants a man is taking an effort. Efforts lead to satisfaction. Thus,



b) Economics is a social Science: Economics studies human beings as members of society participating in economic activities. It does not study humans as isolated individuals. He is interdependent. Thus, economics is a social science.

c) Economics, a Science or an Art?

Treating economics as a science, a given theory is formed through the conduct of experiments, recording observations, analyses of data recorded, drawing conclusions, and testing them. In economics also the same procedure is followed to present any principle or theory. Hence economics is as good as any science. **Only the question is regarding precision.** Scientific experiments are conducted under laboratory conditions, while economic theories are subjected to several causal factors that influence human behavior. The situation of controlled experiments in economics is not a possibility, since it deals with human behavior, which is unpredictable. This indicates the fact that the degree of precision of economics as a science is less when compared to pure sciences, but economics is a science.

As an **Art**, economics shows **solutions to problems**. It helps us how to do a thing. The role of economics as an art can be found in any sphere of economic activity. For, example, it advocates how to maximize the profit of a firm given the resource constraints. Given a problem, the **field of economics guides us to solve the same**. Thus, the field of economics has the attributes of science and art. Economics, therefore, is a science as well as an art.

d) Positive Economics and Normative Economics:

Positive economics is concerned with “what is”. It describes economic behaviors without any value judgment. Positive economics is objective. The statement, “Price rises as demand increases” is related to positive economics.

Normative Economics is concerned with “what ought to be”. It evaluates them with moral judgment. Normative economics is subjective. The statement, “Rising prices are a social evil” is related to normative economics.

Methods of Economics Investigation:

Two methods of economic investigation are used in economic theory.

1. Deductive method

2. Inductive Method

1. Deductive Method: This method involves reasoning or inference from the **General to the Particular** or from the universal to the individuals. It is also known as the abstract, analytical, hypothetical, or apriori method.

Deduction involves four steps:

- (1) Selecting the problems
- (2) Formulating the assumptions
- (3) Formulating the hypothesis through the process of logical reasoning whereby inferences are drawn and (4) Verifying the hypothesis.

2. Inductive Method: This method is also known as the Concrete method, historical method, or realistic method. It involves reasoning from **Particulars to the General** or from the individual to the universal. This method derives economic generalizations based on experiments and observations. In this method detailed data are collected on certain economic phenomena and effort is then made to arrive at certain generalizations which follow from the observations collected.

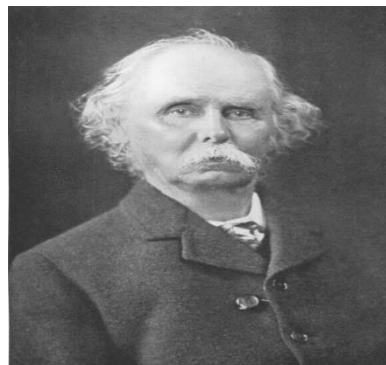
Adam Smith



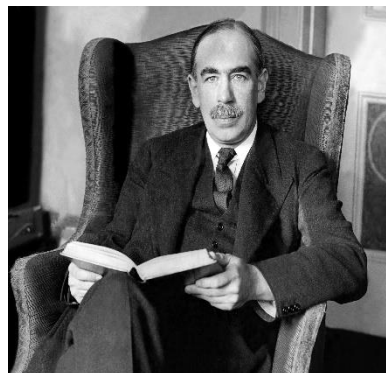
Lionel Robbins



Alfred Marshall



John Maynard Keynes



Lecture 2: Nature of Economic theory; rationality assumption, the concept of equilibrium, and economic laws are generalizations of human behavior. Basic concepts: Goods and services – Classification and characteristics, desire, want – meaning and characteristics, demand, utility, cost and price, wealth, capital, income, and welfare.

NATURE OF ECONOMICS:

The nature and scope of economics are related to the **study of wealth or human behavior or scarce resources**. The scope is very wide and includes the subject matter of economics whether economics is a science or an art or whether it is a positive or normative science.

ECONOMIC THEORY:

Economic Theory provides an outlet for research in all areas of economics based on rigorous theoretical reasoning and on topics in mathematics that are supported by the analysis of economic problems. Published articles contribute to the understanding and solution of substantive economic problems.

PURPOSE OF ECONOMIC THEORY:

To maintain a strong economy, the federal government seeks to accomplish three policy goals: **stable prices, full employment, and economic growth**. In addition to these three policy goals, the federal government has other objectives to maintain sound economic policy.

TYPES OF ECONOMIC SYSTEMS:

Economists generally recognize **four basic types** of economic systems—**traditional, command, market, and mixed** - but they don't completely agree on the question of which system best addresses the challenge of scarcity.

RATIONALITY

A **rational behavior decision-making process** is based on making choices that result in the **most optimal level of benefit or utility for the individual**. Most conventional economic theories are created and used under the assumption all individuals taking part in an action/activity are behaving rationally.

ASSUMPTIONS

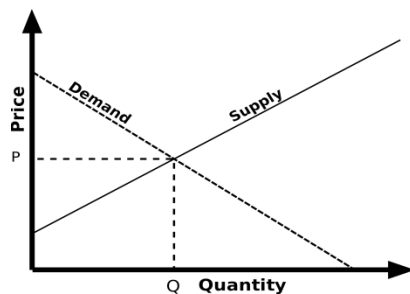
The assumption of Rationality means that we assume that a person is rational in nature. A rational person will always take decisions that result in optimization and provide them with the greatest benefit.

A **rational consumer** will always **aim to maximize his satisfaction**.

A **rational producer** will always **aim to maximize his profit**.

CONCEPT OF EQUILIBRIUM

In economics, **economic equilibrium** is a state where economic forces such as **supply and demand are balanced** and in the absence of external influences, the (equilibrium) values of economic variables will not change.



MARKET EQUILIBRIUM

Market equilibrium is a market state where the **supply in the market is equal to the demand in the market**. The equilibrium price is the price of a good or service when the supply of it is equal to the demand for it in the market.

GENERAL EQUILIBRIUM

General equilibrium theory attempts to **explain the behavior of supply, demand, and prices in a whole economy** with several or many interacting markets, by seeking to prove that the interaction of demand and supply will result in an overall general equilibrium.

Nature of Economic Laws and Generalizations

Economic laws are the principles that govern the actions of the individual in their economic activities. Just like any law of science, economic laws are too conditional. Applicable when certain conditions are fulfilled. What economists do is they consider the basic factors into account while developing a theory, keeping other factors influencing the theory constant. This implies that for developing a theory in economics some kind of abstraction is necessary. There is an important role for assumptions.

“Economic laws are statements of uniformities, which govern human behavior concerning the utilization of limited resources for the achievement of unlimited ends. (Robbins)”

Characteristics of Economic laws:

Economic laws are not government laws: The laws of the government are very stringent and any violation of these laws amounts to punishment. Economic laws, on the other hand, are applicable, only if certain conditions are satisfied.

Economic laws are merely statements of tendencies: These are based on the tendencies of humans who behave in a particular way to a given phenomenon. This is the expected behavior, however, may not be found, for certain resources. This leads to the unpredictable character of Economic laws. Certainty is one thing, which is not guaranteed by economic laws.

Economic laws are hypothetical: These hold good under several things. Economic laws are characterized by the phrase *ceteris paribus* (other things remain the same).

Economic laws are positive but not normative: They only describe the economic phenomenon but do not prescribe how it should be.

Some economic laws are axiomatic in character: It means that they are self-evident as that of the law of diminishing marginal utility and generalization drawn are universally valid.

Economic laws lack exactness of the laws of science: This prompted Marshall to compare the economic laws to the laws of tides rather than the simple laws of gravitation.

BASIC CONCEPTS

GOODS and SERVICES

Economics is concerned with the production and distribution of goods and services.

Goods: It is defined as anything that satisfies human wants or needs.

Characteristic features of goods:

1. They are tangible in nature
2. They are the material outcome of production

Examples: Food grains, Machinery, Seeds, Fertilizers, etc.,

Services: A service is an act or performance that one party can offer to another.

Characteristic Features of Services:

1. They are intangible
2. non-Materialistic
3. Inseparable
4. Variable
5. Perishable

Example: Services rendered by agricultural laborers, doctors, teachers etc.,

CLASSIFICATION OF GOODS

The goods are classified based on Supply, Durability, Consumption and Transferability.

1. BASED ON SUPPLY: The goods are categorized as **economic goods** and **free goods** based on the supply criteria,

Free goods: Free goods are gifts of nature. **Their supply is more than demand** and one can get to the extent they need. No efforts are needed to be put forth by humans to secure free goods. Since these are all freely available in nature, no price needs to be paid. **They have value in use not value in exchange.**

Example: Air, sunshine, rainfall.

The economic goods: that are produced through human efforts are to be purchased at a given price. **Supply is less than demand.** They have value in use and value in exchange.

Example: Building, machinery, and furniture.

Through the clear distinction made between free goods and economic goods based on their distinct characteristic features, the distinction between the two is lost under certain situations. Water, which is free goods near the channel and rivers for the consumers, becomes an economic good in water scarcity places. Similarly, sand which is free good in riverbeds becomes an economic good in the place of house construction activities.

2) BASED ON CONSUMPTION: The Goods are categorized as Consumer goods and Producer Goods.

Consumer goods: are those which yield, satisfaction directly. **They are used by consumers directly to satisfy their wants.**

Example: food, clothing, etc. These goods are known as the Goods of First Order.

Producer goods: these goods help us to produce other goods. **They give satisfaction indirectly** by producing other goods which will yield final satisfaction.

Example: machinery, tools, etc. They are also termed goods of the second order.

3) BASED ON DURABILITY: This classification emphasized the nature of the goods and their usage.

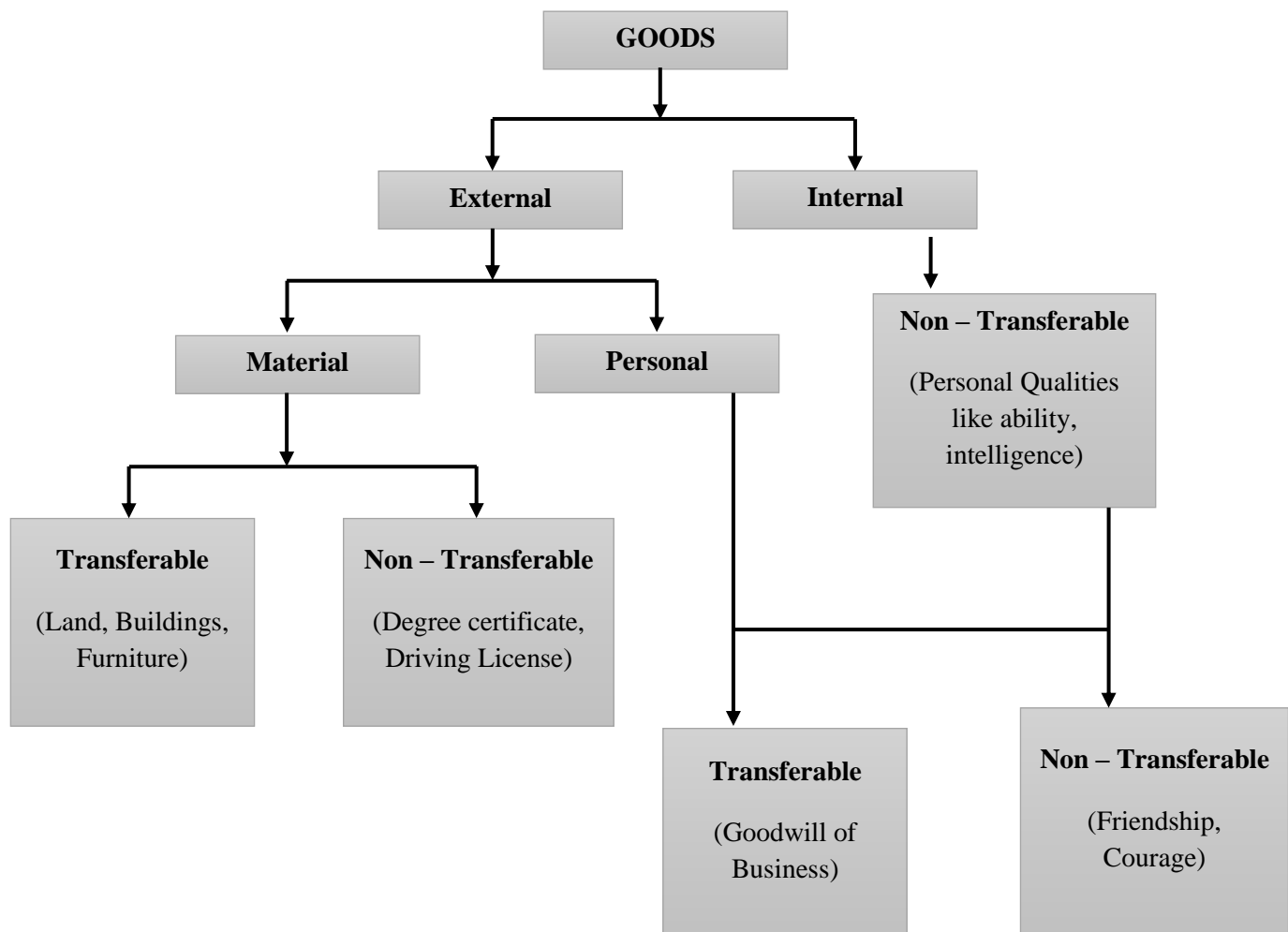
Mono Period Goods: these goods can be used only once in the production and consumption process.

Example: Seeds, Fertilizers, food, etc.,

Poly Period Goods: these are those which can be used repeatedly during the production and consumption process over several periods.

Example: refrigerator machinery, implements, etc.,

4) BASED ON TRANSFERABILITY:



WANTS

Consumption is the study of wants. Anything we desire is a want. The process of satisfaction of wants is consumption. The goods and services can be divided into three categories.

1. Necessaries

2. Comforts

3. Luxuries.

NECESSARIES:

Necessaries are goods and services that are **essential for our existence** and to maintain our efficiency. There are three kinds of necessities. They are,

- i) Necessaries for life.
- ii) Necessaries for efficiency.
- iii) Conventional necessities.

i). Necessaries for life or Existence

Goods that are essential for our very existence are called necessary for life.

Eg. Food, Cloth, Shelter.

ii). Necessaries for efficiency

Goods and services that are essential for maintaining and improving efficiency or working capacity are called necessities for efficiency.

Eg. Nutritious food, house, cycle, chair.

iii). Conventional necessities

Goods that are used out of habit or long-established customs are called conventional necessities.

Eg. Coffee, Tea, and cigarette.

2. Comforts

Comforts are goods that lead to easy living and make our life pleasant. These are consumed in addition to necessities. It also increases efficiency.

Eg. Ordinary chair (necessary) and cushioned chair (Comfort).

3. Luxuries

Goods and services are generally non-essential and expensive. They do not increase efficiency. It means wasteful expenditure. It is consumed to satisfy superfluous wants.

Eg. Ornaments, silk sarees, bungalows, scents, etc.

Necessaries, Comforts and Luxuries are relative terms. They are relative to place, time or person and the social setting.

CHARACTERISTICS OF WANTS

1. Wants are unlimited: There is no end to human desire. If one want is satisfied another want comes up in its place.

2. Particular want is satiable: A single want can be satisfied at a particular time. If a person is hungry, he can satisfy his want fully by taking a sufficient quantity of food.

3. Wants are recurring: Wants to get themselves repeated at intervals of short or long periods.

4. Wants are alternative: For the satisfaction of particular wants different alternatives are available- Coffee, Tea, etc. for drinks. Kerosene, firewood and gas for fuel.

5. Wants are competitive: Some wants are more urgent and others are less urgent.

Eg. For a hungry man, his want for food is more urgent than anything else. Urgent wants are satisfied first. Here people choose to satisfy.

6. Wants tend to become habits: Some wants are habitual. If we satisfy a particular want in a particular way for quite some time, it becomes a habit.

Eg. Taking coffee after breakfast.

7. Wants are complementary: To satisfy a particular want we need several things.

Eg. For writing a letter, we need a pen and paper.

8. Unconscious wants: Some wants are dormant. The emergence of these wants occurs only after Satisfying the conscious wants.

Eg. Gift, prize money.

VALUE

The word “Value” in economics conveys **value in exchange**. It does not include free goods which have only value-in-use. In other words, the value of a commodity refers to those goods that can be obtained in exchange for itself or purchasing power of a commodity in terms of other commodities and services. **Value can be referred to as the capacity of a good to command other things in exchange.**

Characteristics of Value

1. It must possess utility
2. It must be scarce and
3. It must be transferable and marketable.

PRICE

In Prehistoric times, people did not know money and they had a barter system in which goods are exchanged with goods. Therefore, in those days value and price were used synonymously. But nowadays, goods are exchanged for money. Therefore, the **Value of the goods expressed in monetary terms is called Price.**

INCOME

Remuneration paid to the service rendered by a factor of production is called income. For example, a person owns a house from which he gets rent. It is his income. Thus, wealth is the fund and income is the flow. When we refer to income, we say so much per month or year.

WEALTH

In ordinary language, “Wealth” conveys an idea of prosperity and abundance. A man of wealth is understood as a rich person. But in Economics Wealth is synonymous with economic goods. In short, **Wealth means anything which has value.**

Characteristics of wealth:

1. It should possess utility

2. It must be scarce
3. It must be transferable
4. It must be external to the person

Relation between Money and Wealth: Money is a form of wealth. All money is wealth but all wealth is not money.

Relation between Income and Wealth: Income is different from wealth. Wealth yields income. Therefore, Wealth is a fund whereas income is a flow.

TYPES OF WEALTH:

1. Individual Wealth: It consists of all tangible and intangible possessions of the individuals besides loans due to them.

Example: Land, bonds, and deposits are tangible possessions while, intangible possessions are copyrights, patents, etc.,

2. Social Wealth: It is the wealth, which is collectively used by all the people in a nation.

Examples: Railways, Public Parks, Government colleges, etc.,

3. Representative Wealth: It is that form of wealth in the form of title deeds

4. National Wealth: It is an aggregate of all individual's wealth and social wealth of the country inclusive of loans due to people and to the national debts that have to be deducted.

Example: Rivers, mountains.

5. Cosmopolitan Wealth: It is the wealth of the whole world. It is the total wealth of all nationals.

6. Negative Wealth: It refers to the exclusive debts owed by the individuals and the nation.

Demand: In Economics, it means the willingness and ability to purchase a commodity at a given time in a given market.

Utility: It means the **Capacity of the good that satisfies a human want.**

Any commodity or service which can satisfy a human want is said to have utility.

Capital

It is defined as a part of a person's wealth, or another land, which yields an income or which aids in the production of further wealth.

Cost

An amount that has to be paid or given up to get something.

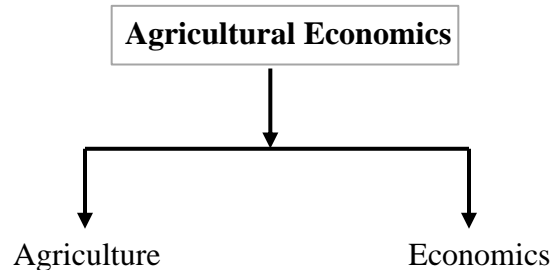
In business, the cost is usually a monetary valuation of

1. Effort

2. Materials

3. Resources

Lecture - 3: Agricultural Economics: Meaning, Definition, Characteristics of Agriculture, Importance and its role in economic development. Agricultural Planning and Development in the country



Agriculture

The word Agriculture comes from the **Latin** word **Ager** referring to the **soil** and **cultura** to its **cultivation**.

Economics

Economics is the science that studies **how people choose to use scarce productive resources** to produce various goods and to distribute these goods to various members of society for their consumption.

Agricultural Economics

Agricultural economics is an applied field of science in which the **principles of choice are applied in the use of scarce resources** such as land, labor, capital and management in farming and allied activities.

Other Definitions

1. Agricultural economics, is the science in which the principles and methods of economics are applied to the special conditions of the agricultural industry. (**Prof. Grey**)
2. Agricultural economics is the **study of relationships arising from man's wealth-getting and wealth-using activity** in agriculture. (**Hibbard**)

3. Agricultural economics is an applied social science dealing with how humans choose to use technical knowledge and scarce production resources such as land, labor, capital and management to produce food and fiber and to distribute it for consumption to various members of society over time. **(Cramer & Jensen)**

Characteristics of Agriculture:

- Land distribution system
- Supply of industrial inputs
- Labor Employment
- The primary stage of economic development
- Capital formation
- Risk and uncertainty
- Existence of middlemen
- Subsistence farming

Importance and its role in Economic Development:

1. Agriculture sector – the backbone of the Indian economy.
2. Share of agriculture in the national income (19.90 %)
3. Employs around 52 percent of the total workforce in the country.
4. Indian agriculture - Source of supply of raw material to leading industries such as cotton, jute and sugar
5. Many industries depend on agriculture – indirectly viz., handloom weaving, oil crushing, rice husking
6. Since the ninth five-year plan onwards the importance of food processing industries is being increasingly recognized and given due weightage in economic development.

7. Agriculture products such as tea, sugar, oilseed, and tobacco, constitute the main items of exports.
8. The prosperity of farmers is the prosperity of the industry.
9. Good crops and products enhance farmers' purchasing power, increasing demand for other manufactured goods.
10. It will help to stimulate the growth of the non-agricultural sector and also help to reduce and strain on foreign exchange earnings.
11. Agriculture growth has a direct impact on poverty eradication.
12. Agriculture growth is an important factor influencing inflation, agricultural wages, and employment generation.

Agricultural planning and development in the country:

- ❖ Agriculture Planning – a major factor in the growth of the Indian economy which is still primarily agrarian.
- ❖ The annual output from the agricultural sector is an important factor in the growth of the economy.
- ❖ Agriculture has a crucial role to play in Indian exports. The Indian economy cannot sustain or accelerate its growth rate without agriculture and agriculture-based products.
- ❖ The planning in agriculture is mainly looked after by the Planning Commission of India which operates and executes under the aegis of the GOI.
- ❖ Agriculture planning in India considers all factors related to the rural sector where most of Indian agriculture originates.
- ❖ The sole objective of the Planning Commission in terms of Agriculture Planning in India is to enhance the total output of agriculture and boost the country's economic growth.

Major objectives under Agriculture Planning:

- ✓ Wastelands and underutilized lands to be utilized
- ✓ Development and reclamation of problematic lands
- ✓ Harvesting the abundant rainwater for irrigation
- ✓ Irrigation development
- ✓ Utility and conservation of natural resources
- ✓ The activities to be diversified to high-value crops
- ✓ The intensity of cropping to be increased
- ✓ To have adequate inputs on time
- ✓ Improvement in production
- ✓ Improvement in productivity
- ✓ Reduction in the cost of production

FIVE-YEAR PLANS IN INDIA

1st Plan (1951-56)

1. The first five-year plan was presented by **Jawaharlal Nehru** in 1951.
2. It gave importance to agriculture, irrigation, and power projects to decrease the country's reliance on food grain imports, resolve the food crisis, and ease the raw material problem, especially in jute and cotton.
3. Nearly 45% of the resources were designated for agriculture, while industry got a modest 4.90 %.
4. The focus was to maximize the output from agriculture, which would then provide the impetus for industrial growth.
5. Though the first plan was formulated hurriedly, it succeeded in fulfilling the targets.

6. Agriculture production increased dramatically, national income went up by 18%, per capita income by 11% and per capita consumption by 9%.

2nd Plan (1956-61)

1. The second five-year plan was initiated in a climate of economic prosperity, industry gained in prominence.
2. Agriculture programs were formulated to meet the raw material needs of industry, besides covering the food needs of the increasing population.
3. The Industrial Policy of 1956 was socialistic.
4. The plan aimed at a 25% increase in national income.
5. Unfavorable monsoons in 1957-58 and 1959-60 impacted agricultural production and the Suez crisis blocked International Trading increasing commodity prices.

3rd Plan (1961-66)

1. While formulating the third plan, it was realized that agriculture production destabilized economic growth.
2. Hence agriculture was given due importance.
3. Also, allotment for the power sector was increased to 14.6% of the total disbursement.
4. Emphasis was on becoming self-reliant in agriculture and industry.
5. The objective of import substitution was seen as sacrosanct.
6. To prevent monopolies and promote economic developments in backward areas, unfeasible manufacturing units were augmented with subsidies.
7. The plan aimed to increase national income by 30% and agriculture production by 30%.
8. The wars with China in 1962 and Pakistan in 1965 and the bad monsoon in almost all the years, meant the actual performance was way off the target.

Annual plans (1966-1969)

1. Due to the failure of a third five-year plan, the Government of India did not implement the fourth five-year plan but implemented 3 Annual plans by replacing the five-year plan.
2. This period (April 1, 1966, to March 31, 1969) is known as the planned holiday in the Indian planning period.

The main objective of Annual Plans:

- To remove the strains in the economy arising from many unforeseen events during the third plan.
- To secure a feasible growth rate without generating inflationary pressures in the economy.
- To have fuller utilization of the infrastructure already created during previous plan periods.
- Annual plans give more importance to the irrigation and Agriculture sector to control inflation and increase agricultural production

4th plan (1969-74)

1. At the time of initiating the fourth plan it was realized that GDP growth and rapid growth of capital accumulation alone would not help improve the standard of living or become economically self-reliant.
2. Importance was given to providing benefits to the marginalized section of society through employment and education.
3. Disbursement to the agricultural sector was increased to 23.30%.
4. The family planning program was given a big stimulus.
5. The achievements of the fourth plan were below targets.
6. Agriculture growth was just at 2.80% and the green revolution did not perform as

expected.

7. Industry too grew at 3.9%.

5th plan (1974-79)

1. As a result of inflationary pressure faced during the fourth plan, the fifth plan focused on checking inflation.
2. Several new economic and non-economic variables such as nutritional requirements, health, family planning, etc. were incorporated into the planning process.
3. The investment mix was also formulated based on demand estimated for final domestic consumption.
4. Industry got the highest allocation of 24.30% and the plan forecasted a growth rate of 5.5% in national income.
5. The fifth plan was discontinued by the new Janata government in the fourth year itself.

Annual plan (1978-1980)

- The Janata Government introduced a new plan on April 1, 1978.
- This plan was named the Rolling Plan.
- The rolling plan period was 1978-1980.
- In the first phase of this rolling plan, the sixth plan was initially started for 5 years (1978- 83) on April 1, 1978.
- In 1980, the sixth plan (rolling plan) prepared by the Janata Government was abandoned by the Congress government and a new sixth plan was introduced for the period 1980-85.

6th plan (1980-85)

1. The Janata government moved away from the GNP approach to development and instead sought to achieve higher production targets to provide employment opportunities to the marginalized section of society.

2. But the plan lacked political will.
3. The Congress government on taking office in 1980 formulated a new plan with a strategy to lay equal focus on infrastructure and agriculture.
4. The plan achieved a growth of 6% pa.

7th Plan (1985-90)

1. The first three years of the seventh plan saw severe drought conditions, despite which the food grain production rose by 3.20 %.
2. Special programs like Jawahar Rozgar Yojana were introduced.
3. Sectors like welfare, education, health, family planning, and employment got a larger disbursement.

Annual plan (1990-1992)

- This period was of political instability hence, no five-year plan was implemented during the period.
- Annual plans were made for the period between 1990 and 1992.
- The country faced a severe balance of payment crisis.

8th plan (1992-97)

1. The eighth plan was initiated after a severe balance of payment crisis, intensified by the Gulf War in 1990.
2. Several structural modification policies were brought in to put the country on a path of a high growth rate.
3. They devalued rupees, dismantled license prerequisites, and decreased trade barriers.
4. The plan targeted an annual GDP growth rate of 5.60 % while keeping inflation under control.

9th plan (1997-2002)

1. It was observed in the eighth plan that, even though the economy performed well, the gains did not percolate to the weaker sections of the society.
2. The ninth plan, therefore, laid greater impetus on increasing agricultural and rural incomes and alleviating the conditions of the marginal farmers and landless laborers.

10th plan (2002-2007)

1. The tenth plan aimed to make the Indian economy the fastest-growing economy in the world, with a growth target of 10%.
2. It wanted to bring in investor-friendly market reforms and create a friendly environment for growth.
3. It sought active participation by the private sector and increased FDI in the financial sector.
4. Emphasis was laid on corporate transparency and improving the infrastructure.
5. It sought to reduce the poverty ratio by 5 percentage points by 2007 and increase literacy rates to 75 percent by the end of the plan.
6. Increase in forest and tree cover to 25 percent by 2007 and all villages to have sustained access to potable drinking water.

11th plan (2007-2012)

1. The eleventh plan has the objective to increase GDP growth to 10%.
2. Increase agricultural GDP growth to 4% annually to ensure a wider spread of benefits.
3. Create 70 million new work opportunities.
4. Augment minimum standards of education in primary school.
5. Reduce infant mortality rate to 28 and malnutrition among children of age group 0-3 to half of its present level.

6. Ensure electricity connection to all villages and increase forest and tree cover by five percentage points.

Twelfth Five-Year Plan (2012–2017)

1. To create 50 million new work opportunities in the non-farm sector.
2. To remove gender and social gaps in school enrolment.
3. To enhance access to higher education.
4. To reduce malnutrition among children aged 0–3 years.
5. To provide electricity to all villages.
6. To ensure that 50% of the rural population has access to proper drinking water.
7. To increase green cover by 1 million hectares every year.
8. To provide access to banking services to 90% of households.

Future

- ❖ With the Planning Commission dissolved, no more formal plans are made for the economy, but Five-Year Defense Plans continue to be made.
- ❖ However, there is no Thirteenth Five-Year Plan
- ❖ In India the role of planning activities was played by the Planning Commission (until 2014), afterwards NITI Aayog (National Institution for Transforming India), a policy Think Tank replaced the Planning Commission intending to make the planning approach more inclusive and bottom-up.
- ❖ The charter of NITI Aayog describes it as a body that should act as a catalyst of change in India's federal and complex socio-economic system.
- ❖ However, the experts have raised concerns regarding the independence of NITI Aayog to guide the government and become a mouthpiece of the government and an implementer of the government's projects.

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Lecture 4 - Demand –meaning – kinds of demand – Law of demand - demand schedule – demand curve –and determinants of demand.

Meaning of Demand

Demand in economics means a desire to possess a good supported by **willingness and ability to pay for it**. If you have the desire to buy a certain commodity, say, a tractor, but do not have the adequate means to pay for it, it will simply be a wish, **a desire or a want and not a demand**.

Demand is an effective desire, i.e., a desire which is backed by willingness and ability to pay for a commodity to obtain it. In the words, "**Demand means the various quantities of a good that would be purchased per unit of time at different prices in a given market**". There are thus three main characteristics of demand in economics.

1. **Willingness and ability to pay:** Demand is the amount of a commodity for which a consumer has the willingness and also the ability to buy.
2. **Demand is always at a price.** If we talk of demand without reference to the price, it will be meaningless. The consumer must know both the price and the commodity. He will then be able to tell the quantity demanded by him.
3. **Demand is always per unit of time.** The time may be a day, a week, a month, or a year

Kinds/Types of demand

1. Price Demand
2. Income Demand
3. Cross Demand

1. Price Demand:

It refers to various quantities of a good or service that a consumer would be willing to purchase **at all possible prices** in a given market at a given point in time. (*Ceteris paribus*). The price demand expresses the relationship between prices and quantities demanded.

2. Income Demand:

It refers to various quantities of goods or services that consumers would be willing to purchase **at different levels of income**. (*Ceteris paribus*).

The income demand brings out the relationship between income and quantities demanded.

3. Cross Demand:

It refers to various quantities of goods or services that a consumer would be willing to purchase not due to changes in the price of the commodity under consideration, but due to **changes in the price of related commodities**. (*Ceteris paribus*)

Demand Schedule

The demand schedule is a tabular representation of the quantity demanded of a commodity at various prices.

Individual demand: The demand of one person is called **individual demand**.

Market demand: demand of many persons is known as **market demand**.

For instance, there are four buyers of apples in the market, namely A, B, C and D.

Demand schedule for apples (dozens)

PRICE	Buyer A	Buyer B	Buyer C	Buyer D	Market Demand
10	1	0	3	0	4
9	3	1	6	4	14
8	7	2	9	7	25
7	11	4	12	10	37
6	13	6	14	12	45

The demand by buyers A, B, C, and D are individual demands. The total demand by the four buyers is market demand. Therefore, the total market demand is derived by summing up the quantity demanded of a commodity by all buyers at each price.

The demand schedule shows the relationship between the quantity demanded of a commodity and its price.

Demand Curve

The demand curve is a diagrammatic representation of the demand schedule. It is a graphical representation of the price-quantity relationship. An individual demand curve shows the highest price which an individual is willing to pay for different quantities of the commodity. While, each point on the market demand curve depicts the maximum quantity of the commodity that all consumers taken together would be willing to buy at each level of price, under given demand conditions.

1). Derived demand.

Derived demand refers to the demand for goods that are **needed for further production**. It is the demand for producer's goods.

Eg: industrial raw materials, machine tools, and equipment.

2). Autonomous demand

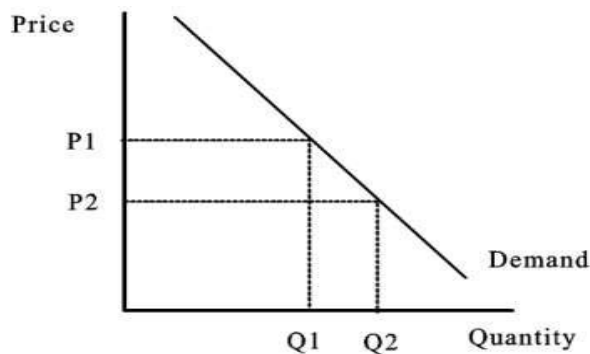
Autonomous demand is **independent of the other product or main product**. It's not linked or tie-up with other goods or commodities.

Eg: food and clothes.

Law of Demand

The law of demand states that as price increases (decreases) consumers will purchase less (more) of the specific commodity.

There is an inverse relationship between price and quantity of demand.



As the price falls from P1 to P2 the quantity demanded increases from Q1 to Q2. **This is a negative relationship between price and quantity**, hence the negative slope of the demand schedule; as predicted by the law of demand.

The demand curve has a negative slope, **i.e.**, it slopes downwards from left to right depicting that with a price increase, quantity demanded falls and vice versa. The reasons for a downward-sloping demand curve can be explained as follows-

1. Income effect:

With the fall in the price of a commodity, the purchasing power of consumers increases. Thus, **he can buy the same quantity of commodity with less money or he can purchase greater quantities of the same commodity with the same money.** Similarly, if the **price of a commodity rises, it is equivalent to a decrease in the income of the consumer** as now **he has to spend more for buying the same quantity as before.** This change in purchasing power due to price change is known as the income effect.

2. Substitution effect:

When the price of a commodity falls, it becomes relatively cheaper compared to other commodities whose prices have not changed. Thus, the consumer tends to consume more of the commodity whose price has fallen (**i.e.,**) **They tend to substitute that commodity for other commodities which have now become relatively dear.**

3. Law of diminishing marginal utility:

It is the basic cause of the law of demand. The law of diminishing marginal utility states that as an individual consumes more and more units of a commodity, the utility

derived from it goes on decreasing. To get maximum satisfaction, an individual purchases in such a manner that the **marginal utility of the commodity is equal to the price of the commodity ($MU = P$)**. When the price of the commodity falls, rational consumer purchases more to adequate the marginal utility and the price level. Thus, if a consumer wants to purchase larger quantities, then the price must be lowered. This is what the law of demand also states.

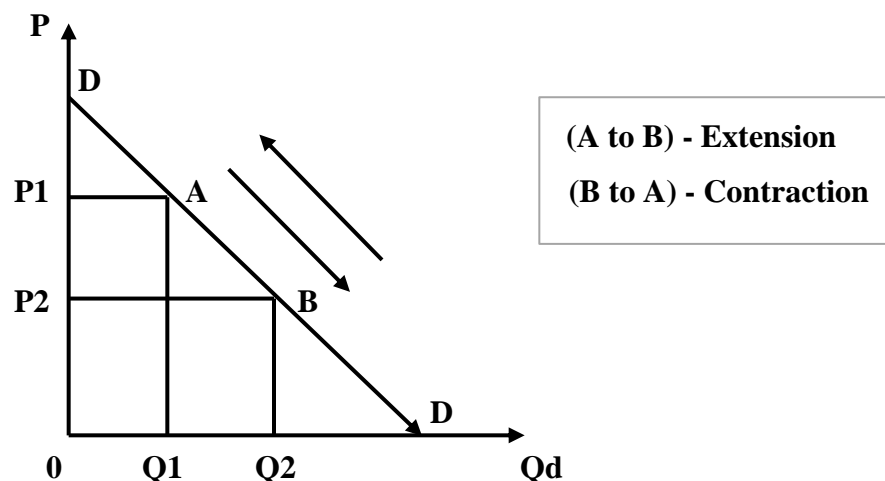
Changes in demand for a commodity can be shown through the demand curve in two ways:

- (1). Movement along the demand curve (**Extension and contraction**)
- (2). Shifts of the demand curve (**Increase and decrease**)

1. Movement along the Demand Curve:

Demand is a multivariable function. If income and other determinants of demand such as tastes of the consumers, changes in prices of related goods, income distribution, etc., remain constant and there is a change only in the price of the commodity, then we move along the same demand curve, in this case, the demand curve remains unchanged. When, **as a result of a price change, the quantity demanded increases or decreases, it is technically called an extension and contraction in demand.**

A movement along a demand curve is defined as a change in the quantity demanded due to changes in the price of a good that will result in a movement along the demand curve. For instance, a fall in the price of apples from P_1 to P_2 causes an increase in the quantity demanded from Q_1 to Q_2 .



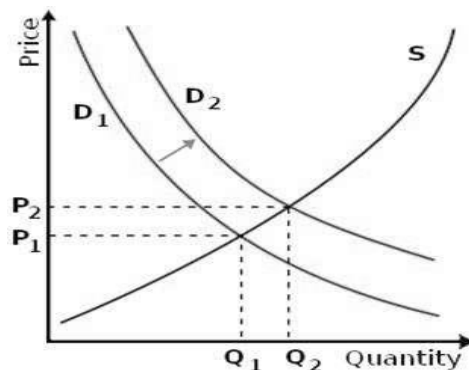
2. Shifts in the demand curve

A shift of the demand curve is referred to as a change in demand due to any factor other than price. A demand curve will shift if any of these occurs:

1. Change in the price of other goods (complements and substitutes); leading to an increase/decrease in real income.
2. Change in the income level
3. Change in consumer tastes and preferences
4. Population
5. Advertisement
6. Substitute price
7. Interest
8. Fashion and Trend
9. Income
10. Competitive Products.

Each of these factors tends the demand curve to shift downwards to the left or upwards to the right. While **a downward shift signifies a decrease in demand, an upward shift of the demand curve shows an increase in demand.**

As shown in the figure the demand curve will shift to D₂ from D₁ and accordingly the price and quantity demanded will change.



Movement along a demand curve is the result of an increase or decrease in the price of the good, while the demand curve shifts when any demand determinant other than price changes.

Exceptions to the law of demand

Unlike other laws, the law of demand also has few exceptions (**i.e.**) there is no inverse relationship between the price and quantity demanded of these goods. A few of them are as follows:

1. Giffen goods (Inferior goods):

These are those inferior goods whose quantity demanded decreases with a decrease in the price of the good. A Giffen good, in economic theory, is a good that is in greater demand as its price increases.

Example: if the price of an essential food staple, such as rice, rises it may mean that consumers have less money to buy more expensive foods, so they will be forced to buy more rice.

2. Commodities that are regarded as status symbols:

Expensive commodities like jewelry, AC cars, etc., are used to define status and to display one's wealth. These goods don't follow the law of demand and quantity demanded increases with a price rise as the more expensive these goods become, the more will be their worth as a status symbol. (**Veblen goods**)

3. Expectation of change in the price of the goods in the future:

If a consumer expects the price of a good to increase in the future, they may start accumulating a greater amount of the goods for future consumption even at the presently increased price. The same holds vice versa

Determinants of demand

Various factors affect the quantity demanded by a consumer of a good or service. The key determinants of demand are as follows

1. Price of the good: This is the most important determinant of demand. The relationship between the price of the good and quantity demanded is generally inverse as in the law of demand.

2. Price of related goods:

Substitutes: If the price of a substitute goes down then the quantity demanded of the good also goes down and vice versa.

Complementary goods: If the price of gasoline goes up the quantity demanded by automobiles will go down. Thus, the price of complement has an inverse relationship with the demand for a good.

3. Income: Higher the income of the consumer the more will be the quantity demanded of the good. The only exception to this will be inferior goods whose demand decreases with an increase in income level

4. Individual tastes and preferences: A preference for a particular good may affect the Consumer's choice and he/she may continue to demand the same even in rising prices scenario

5. Expectations about future prices & income: If the consumer expects prices to rise in the future, he/she may continue to demand higher quantities even in a rising price scenario and vice versa.

Lecture 5 – Utility Theory: Cardinal and Ordinal theory, Law of Diminishing Marginal Utility, Equi Marginal Utility, Indifference curve and Properties – Budget Line – Definition, Assumption, Limitations and Applications.

Utility

Utility may be defined as the **Power or Capacity of a commodity or service to satisfy a human want**. The term ‘utility’ should be differentiated from ‘satisfaction’. **Utility implies ‘expected satisfaction’** whereas **satisfaction stands for ‘realized satisfaction’**. A consumer thinks of ‘utility’ when contemplating purchasing a commodity, but he secures the ‘satisfaction’ only after having consumed the commodity.

Utility and Value: The term ‘utility’ differs from the ‘value’ of a commodity.

- 1) **Utility** is the **want-satisfying power** of a commodity.
- 2) While the term ‘**value**’ would mean the **power of a commodity to exchange** for another commodity.
- 3) Utility is subjective, whereas value is an objective term.
- 4) Both economic and free goods have utility. But only economic goods have value.

Characteristic Features of Utility:

1. Utility is subjective:

Utility varies from person to person.

Eg: A high-yielding variety of seeds gives more utility to the farmer. The same seed provided to a cloth merchant gives zero utility.

2. Utility varies with purpose:

For example, coconut oil is used as cooking, hair or lubricant.

3. Utility varies with time:

The intensity of a person’s desire for a commodity is different at various periods.

For example, the Labor requirement for paddy peak during transplantation, harvesting and threshing than other operations taken up in paddy cultivation.

4. Utility varies with ownership:

Ownership of a good creates greater utility from a good than when it is hired

Eg: owning tractors gives more utility than hiring them.

5. Utility need not be synonymous with pleasure:

Eg: A sick man has to consume medicines to get cured. He does not get pleasure during the process.

6. Utility does not mean satisfaction:

The Utility is distinct from satisfaction. It implies the potentiality of satisfaction in a given commodity. But satisfaction is the result of consumption. **Satisfaction is what we get and utility is the quality of a good that gives satisfaction.**

Kinds of Utility:

1. Form Utility:

If the physical form of a commodity is changed, its utility may increase. For instance, the utility of cotton increases, if it is converted into clothes.

2. Place Utility:

If a commodity is transported (Surplus area) from one place to another (Scarcity area), its utility may increase. For instance, if rice is transported from Tamil Nadu to Kerala, its utility will be more.

3. Time utility:

If the commodity is stored up for future usage, its utility may increase. During the rainy season, water is stored in reservoirs and it is used at a later time. This increases the utility of that stored water.

4. Possession Utility:

The Utility obtained due to possession or transfer of ownership of the commodity is called possession utility. Buying and selling create possession utility.

Eg: Farmers have less utility compared to consumers in the form of rice. Similarly, any other commodities like fruits, vegetables, livestock products, etc., would have higher utility when these goods change hands from farmers.

Cardinal Utility:

According to the cardinal utility concept, **it is possible to measure and compare the utilities of two commodities in terms of numbers.** Marshall advocated the cardinal approach to measure.

Ordinal Utility:

On the other hand, according to the concept of ordinal utility, **the utility cannot be measured; it can only be compared to the preference of the consumer.** Modern economists like **Allen and Hicks** have supported the ordinary approach and replaced the utility analysis with the indifference curve analysis.

Total Utility:

It is the sum amount of **satisfaction derived from the consumption of different units of the commodity.**

Marginal Utility:

It is the **additional utility derived by an individual, by the consumption of one more unit of the commodity.** Economists measure utility in imaginary units called **utils.**

Law of Diminishing Marginal Utility:

This law indicates the familiar behavior of marginal utility, i.e., as a consumer takes more and more units of a good, the additional satisfaction that he derives from an extra unit of the good goes on falling. Marshall stated the law of diminishing marginal utility as follows:

“The additional benefit which a person derives from a given increase of his stock of a thing diminishes with every increase in the stock that he already has”.

Let us suppose that a consumer takes 9 units of mango one after another. The utility he gets from the second unit of mango will be lesser than the utility he gets from the first unit. Thus, the **marginal utility from successive units of mango will tend to decline.** It can be observed from

Table 2.1 that the **total utility increases at a diminishing rate**. When the marginal utility becomes negative, the total utility starts decreasing. This is illustrated in Figure 2.1.

Table 2.1 Total and Marginal Utility

Units of Mango	Total Utility (utils)	Marginal Utility (utils)
1	12	12
2	22	10
3	30	8
4	36	6
5	40	4
6	41	1
7	41	0
8	39	-2
9	34	-5

This law is based on two facts. Firstly, while the total number of wants of a man is unlimited, every single want is satiable. Therefore, as an individual consumes more and more units of a good, the intensity of his want for the good goes on falling and a point is reached where the individual no longer wants any more units of the good. Secondly, the different goods are not perfect substitutes for each other. When an individual consumes more and more units of a good, the intensity of his particular want for the good diminishes. But, if the units of that good could be devoted to the satisfaction of other wants and yielded as much satisfaction as they did initially in the satisfaction of the first want, then the marginal utility of the good would not have diminished.

Equilibrium Condition

The aim of the consumer is assumed that should get as much higher satisfaction as possible from his purchases. **Thus, the rational behavior of the consumer is to get maximum total utility.** If the marginal utility from the commodity is greater than the price he has to pay, he will buy more of the commodity. If the marginal utility of the commodity is equal to the price of the

commodity, i.e., $MU_x = P_x$, he will stop his purchase of the commodity. Here, the marginal utility is measured in terms of money. If the price of mango is Re.1 per unit, he will purchase 6 units of mango. At this point, he is said to be in equilibrium i.e., he attains maximum satisfaction.

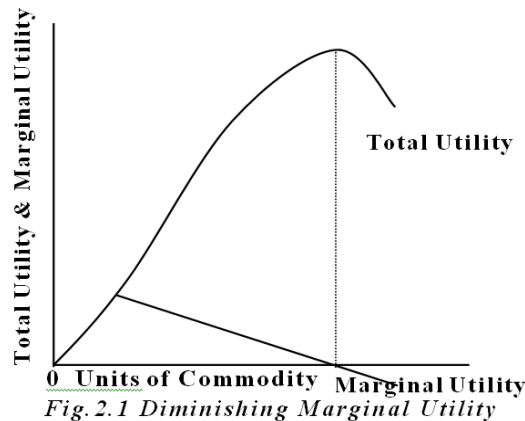


Fig. 2.1 Diminishing Marginal Utility

Assumptions of the Law

- Utility can be absolutely or cardinally measured
- The units of the commodity are homogeneous, i.e., they are alike in size and quality.
- The tastes of the consumers remain unchanged during the process of consumption.
- There is no time gap between the consumption of the two units of the commodity.
- There should be no change in the price of the substitute goods
- Money income of the consumer remains the same.

Limitations

There are certain commodities for which the marginal utility does not diminish with every increase in their stock of them, **E.g.** collection of stamps and ancient coins, consumption of liquor and so on.

The utility of a commodity to a person depends on the quantity of that commodity possessed by others. Suppose in a particular locality, a person has two cars and his rival

has only one car. Then the latter's desire for the second car will be higher than that of the first car.

The law will not hold good in case of misers. The more money he gets, the greater will be his desire for the additional units of money that he gets.

However, careful consideration will show that after a certain stage even the marginal utility of liquor, collection of the same type of stamps and coins, cars, money, etc. will start declining and ultimately become negative. Thus, in reality, there is no exception to this law as it has universal application in all cases of consumption.

Importance of the Law

1). This law enables us to derive the law of demand. The law of demand states that larger quantities of a commodity would be bought at a lower price than at a higher price. The reason is that as more and more units of a commodity are purchased, its marginal utility to the consumer becomes less and less, and he progressively gives lesser importance to additional units of the commodity. He will, therefore, buy additional units of the commodity only at a lower price. The law of demand is, thus, derived from the law of diminishing marginal utility.

2). This law is useful for regulating consumption expenditure. **If the marginal utility of the commodity is equated to its price, then the consumer attains maximum satisfaction.**

3). The marginal utility of money to rich people will be smaller than the marginal utility of money to poor people. So, the incomes of rich people are taxed at a progressive rate for which the law of diminishing marginal utility offers the basis.

4). With the help of the marginal utility concept, we can explain the difference between value-in-use and value-in-exchange. **This can be explained by the diamond–water paradox.** The price of a commodity is governed by its marginal, not total utility. The total utility of water may be infinite on account of its relative abundance, but its marginal utility is zero. Hence, water commands a lower price. On the contrary, the total

utility of a diamond may be low, but its marginal utility is very high on account of its relative scarcity. Hence, a diamond commands a higher price.

Marginal Utilities of Related Goods

Goods may be substitutes or complementary in nature. The Substitutes are capable of satisfying the same want, **(E.g.) tea and coffee**. If they are perfect substitutes, they may be treated as one commodity for all practical purposes. But most goods are imperfect substitutes. In the case of such goods, other things being equal, the marginal utility of any such good (mango) decreases, as the quantity of its substitute (orange) with the consumer increases.

Complementary goods are such goods that are wanted together for the satisfaction of want, **(E.g.) bread and butter**. In such cases, other things remain the same, the marginal utility of one good increases, as the quantities of its complementary good with the consumer increase. If, for instance, a consumer wants to take more bread, the marginal utility of butter goes up.

Law of Equi - Marginal Utility or Law of Substitution or Law of Maximum Satisfaction:

The Law of Equi-marginal utility is one of the most fundamental principles of economics. Often this is also called the **Law of Substitution** or the **Law of Maximum Satisfaction**. As we all know human wants are unlimited whereas the means to achieve or satisfy all these wants are only limited. Hence, it becomes essential for a consumer to prioritize his wants as the most urgent wants that need to be fulfilled first. Also, the consumer has to choose the right quantities of different commodities so that his utility is maximized. **The law of Equi-marginal utility helps us to understand how a consumer maximizes his level of satisfaction or utility from different commodities with a given income.**

Definition: Marshall stated this law as follows: *“If a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility in all”*.

According to this law, a consumer distributes a given quantity of money among its various uses in such a manner that its marginal utility in all uses is equal. Such a distribution of the money income among different commodities will secure the consumer the maximum satisfaction.

Assumptions

- Utility can be absolutely or cardinally measured
- The units of the commodity are homogeneous, i.e., they are alike in size and quality.
- The tastes of the consumers remain unchanged during the process of consumption.
- There is no time gap between the consumption of the two units of the commodity.
- There should be no change in the price of the substitute goods
- Money income of the consumer remains the same.

Explanations

The law of Equi-marginal utility is simply an extension of the law of diminishing marginal utility to two or more commodities. The law of equi-marginal is known, by various names. **It is named the Law of Substitution, the Law of Maximum Satisfaction, the Law of Indifference, the Proportionate Rule and Gossen's Second Law.** In cardinal utility analysis, this law is stated by **Lipsey** in the following words. *"The household maximizing the utility will so allocate the expenditure between commodities that the utility of the last penny spent on each item is equal"*.

Consumer's equilibrium with two or more goods purchased. A prudent consumer to get the maximum satisfaction from his limited means compares not only the utility of a particular commodity and the price but also the utility of the other commodities which he can buy with his scarce resources. If he finds that a particular expenditure in one use is yielding less utility than that of another, he will try to transfer a unit of expenditure from the commodity yielding less marginal utility to the commodity yielding higher marginal utility. The consumer will reach his equilibrium position when it will not be possible for

him to increase the total utility by transferring expenditure from less advantageous uses to more advantageous uses.

The consumer will maximize total utility from his given income when the utility from the last rupee spent on each good is the same. Algebraically, this is when; Here (a), (b), (c), ... n is a large number of goods consumed. It may here be noted that when a consumer is in equilibrium there is no way to increase utility by reallocating his given money income.

The doctrine of equi-marginal utility can be explained by taking an example. Suppose a person has Rs.5 with him which he wishes to spend on two commodities, Pencils and Erasers. The marginal utility derived from both these commodities is as under:

Units of Money (Rs.)	MU of Pencils	MU of Erasers
1	10	12
2	8	10
3	6	8
4	4	6
5	2	3

Rs.5 Total Utility=30 Total Utility = 39

A rational consumer would like to get maximum satisfaction from Rs. 5.00. He can spend this money in three ways.

- (1) Rs. 5.00 may be spent on Pencils only
- (2) Rs. 5.00 may be utilized for the purchase of Erasers only.
- (3) Some rupees may be spent on the purchase of Pencils and some on the purchase of Erasers.

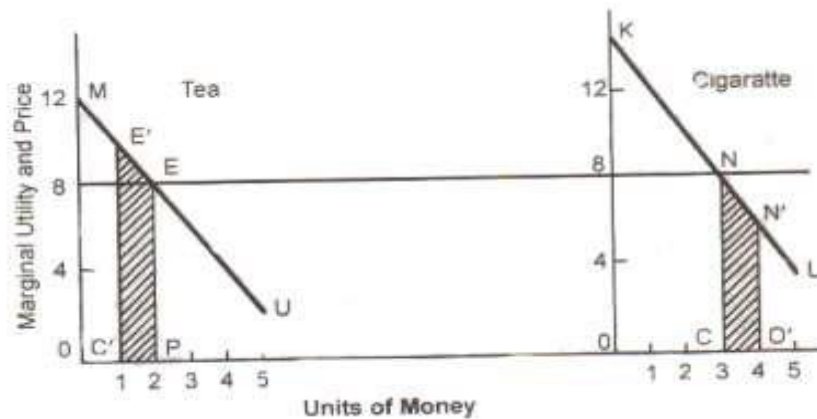
If the prudent consumer spends Rs. 5.00 on the purchase of Pencils, he gets 30 utilities. If he spends Rs. 5.00 on the purchase of Erasers, the total utility derived is 39 which is higher than Pencils. To make the best of the limited resources, he adjusts his expenditure.

(1). By spending Rs. 4.00 on Pencils and Rs. 1.00 on Erasers, he gets 40 utilities
($10+8+6+4+12=40$).

(2). By spending Rs. 3.00 on Pencils and Rs. 2.00 on Erasers, he derives 46 Utility
($10+8+6+12+10=46$).

(3). By spending Rs. 2.00 on Pencils and Rs. 3.00 on Erasers, he gets 48 utilities
($10+8+12+10+8=48$).

(4). By spending Rs. 1.00 on Pencils and Rs. 4.00 on Erasers, he gets 46 utilities
($10+12+10+8+6=46$).



The sensible consumer will spend Rs. 2.00 on Pencils and Rs. 3.00 on Erasers and will get maximum satisfaction. When he spends Rs. 2.00 on Pencils and Rs. 3.00 on Erasers, the marginal utility derived from both these commodities is equal to 8. When the marginal utilities of the two commodities are equalized, the total utility is then maximum i.e., 48 as is clear from the schedule given above.

This law is known as the Law of Maximum Satisfaction because a consumer tries to get the maximum satisfaction from his limited resources by planning his expenditure so that the marginal utility of a rupee spent in one use is the same as the marginal utility of a rupee spent on another use.

It is known as the Law of Substitution because the consumer continues substituting one good for another till he gets the maximum satisfaction.

It is called the Law of Indifference because the maximum satisfaction has been achieved by equating the marginal utility in all the uses. The consumer then becomes indifferent to reading just his expenditure unless some change takes place in his income or the prices of the commodities, etc.

Limitations of the Law

(i). Effect of fashions and customs. The law of equi-marginal utility may become inoperative if people forced by fashions and customs spend money on the purchase of those commodities which they know yield less utility but they cannot transfer the unit of money from the less advantageous uses to the more advantageous uses because they are forced by the customs of the country.

(ii). Ignorance or Carelessness. Sometimes people due to their ignorance of price or carelessness to weigh the utility of the purchased commodity do not obtain the maximum advantage by equating the marginal utility in all the uses.

(iii). Indivisible Units. If the unit of expenditure is not divisible, then again, the law may become inoperative.

(iv). Freedom to Choose. If there is no perfect freedom between various alternatives, the operation of the law may be impeded;

Applications or Practical Importance of the Law of LEMU:

1. Consumption: A wise consumer acts on this law while arranging his expenditure and obtains maximum satisfaction.

2. Production: To obtain maximum net profit, he must substitute one factor of production with another to have the most economical combination.

3. Exchange: Exchange implies the substitution of one thing for another and hence this law is important.

4. Distribution: It is on the principle of marginal productivity that the share of each factor of production is determined.

5. Public finance: The Government is also guided by this law in public expenditure by allocation of revenue (money) in such a way that it will secure the maximum welfare of the people.

Indifference Curve Analysis (Ordinal Approach)

The utility analysis suffers from a defect of the subjective nature of utility i.e., utility cannot be measured precisely in quantitative terms. To overcome this difficulty, Economists have evolved an alternative approach based on indifference curves. According to this indifference curve analysis, the utility cannot be measured precisely but the consumer can state which of the two combinations of goods he prefers without describing the magnitude of strength of his preference. **This means that if the consumer is presented with several various combinations of goods, he can order or rank them on a 'scale of preferences.** If the various combinations are marked A, B, C, D, E, etc., the consumer can tell whether he prefers A to B, or B to A or is indifferent between them. Similarly, he can indicate his preference or indifference between any other pairs or combinations. The concept of ordinal utility implies that the consumer cannot go beyond stating his preference or indifference. In other words, if a consumer prefers A to B, he cannot tell by **'how much** he prefers A to B. **The consumer cannot state the 'quantitative differences' between various levels of satisfaction;** he can simply compare them 'qualitatively', that is, he can merely judge whether one level of satisfaction is higher than, lower than, or equal to another.

The basic tool of Hicks - Allen ordinal analysis of demand is the indifference curve that represents **all the possible combinations of goods that give the same satisfaction to the consumer.** In other words, all combinations of the goods lying on a consumer's indifference curve are equally preferred by him. **The indifference curve is also called the Iso-utility curve.** The indifference schedule is the tabular statement that shows the different combinations of two commodities yielding the same level of satisfaction.

Table 2.4 Indifference schedule

Combination	Rice (X)	Wheat (Y)
I	1	12
II	2	8
III	3	5
IV	4	3
V	5	2

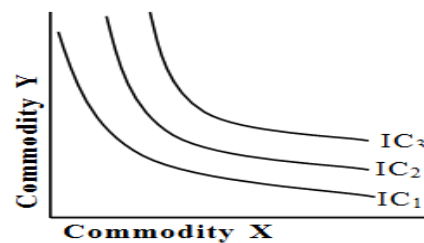


Fig 2.3 Indifference Curve Map

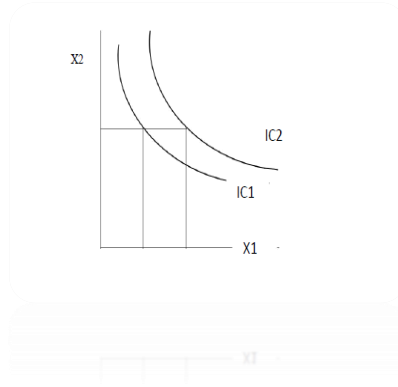
Now the consumer is asked to tell how much wheat (Y) he will be willing to give up for the gain of an additional unit of rice (X) so that his level of satisfaction remains the same. If the gain of one unit of rice compensates him fully for the loss of 4 units of wheat, then the next combination of 2 units of rice and 8 units of wheat will give him as much satisfaction as that of the initial or first combination.

A set of indifference curves representing the scale of preference at different levels of satisfaction is known as an indifference curve map (Fig 2.3). All combinations lying on indifference curve 3 (IC3) provide the same satisfaction but the level of satisfaction on Indifference curve 3 (IC3) will be greater than the level of satisfaction on indifference curve 2 (IC2).

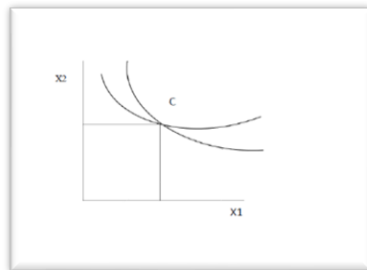
Properties of indifference curve

1. IC has a negative slope which denotes that if the number of one commodity decreases, the quantity of the other must increase, for the consumer to remain at the same level of satisfaction.

2. ICs that lie farther away from the origin denote a higher level of satisfaction. Though, IC1 and IC2 have the same quantity of X2 IC2 has more X1 than IC1. Hence IC2 will give higher satisfaction.



3. ICs do not intersect. If they intersect, the point of intersection will denote the same level of satisfaction for two ICs, which is against the definition of IC. At point C, Both IC1 and IC2 have the same combination of X1 and X2 and hence the same level of satisfaction. But, according to property 2 above, higher IC should have a higher level of satisfaction. So, the intersection of ICs is not theoretically correct.



4. ICs are convex to the origin. It means the slope of IC decreases when we move from left downwards to right. **i.e.,** diminishing MRS of commodities.

Consumer Equilibrium under the IC approach

The consumer is in equilibrium when he maximizes his utility, given his income and market prices. This he achieves when he reaches the highest possible IC, given his

budget line. The necessary and sufficient conditions to achieve the above-said equilibrium of the consumers

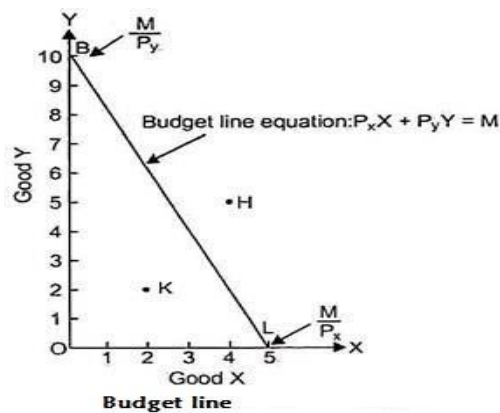
(1). The necessary condition (or First order condition) is **MRS be equal to the price ratio.**

$$MRS_{xy} = P_x / P_y$$

(2). The sufficient condition (or second-order condition) is IC be convex to the origin. This condition is fulfilled by the assumption of diminishing MRS_{xy} (i.e. the slope of IC decreases as we move left to the right downwards).

Budget line

The budget line shows all those combinations of two goods that the consumer can buy by spending his given money income on the two goods at their given prices.



- Consider the income as M and commodity prices as P_x and P_y .
- If the consumer spends all his income on commodity Y he can buy M/P_y units of Y .
- If the consumer spent all his income on commodity X , he can buy M/P_x units of X .
- Points B and L denote the above points. Joining these points gives a Budget line.
- Budget line is the income constraint for maximizing utility.
- Slope of Budget line is $= OB/OL = P_x/P_y$

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Lecture – 6 Consumer's Equilibrium and Derivation of Demand Curve, Concept of Consumer Surplus and its importance.

Consumer's Equilibrium:

The consumer reaches equilibrium position i.e., **attains maximum satisfaction at the point of tangency between the indifference curve and the price line.** This indifference curve is of the highest order in the consumer's scale of preference within his reach. At equilibrium point (E), the slopes of the indifference curve and the price line are the same. **The slope of the indifference curve shows the marginal rate of substitution of X for Y (MRS_{xy}), while the slope of the price line indicates the ratio between the prices of two goods, i.e.,** in Fig 2.8. Thus, at point E, consumers are in equilibrium, that is,

$$MRS_{xy} = \frac{\text{Price of Good X}}{\text{Price of Good Y}}$$

That is, (Slope of Indifference curve = Slope of Budget/Price line)

$$\frac{\Delta Y}{\Delta X} = \frac{P_x}{P_y}$$

1. **At point R**, the MRS_{xy} is greater than the given price ratio. Hence, the consumer will substitute good X for good Y and will come down along the price line PL. He will continue to do so till the MRS_{xy} becomes equal to the price ratio, that is, the indifference curve becomes tangent to the given price line, PL.
2. **At point S**, the MRS_{xy} is less than the given price ratio. Therefore, it will

be to the advantage of the consumer to substitute Y for good X and accordingly move up along the price line (PL) till the MRS_{xy} rises to become equal to the given price ratio.

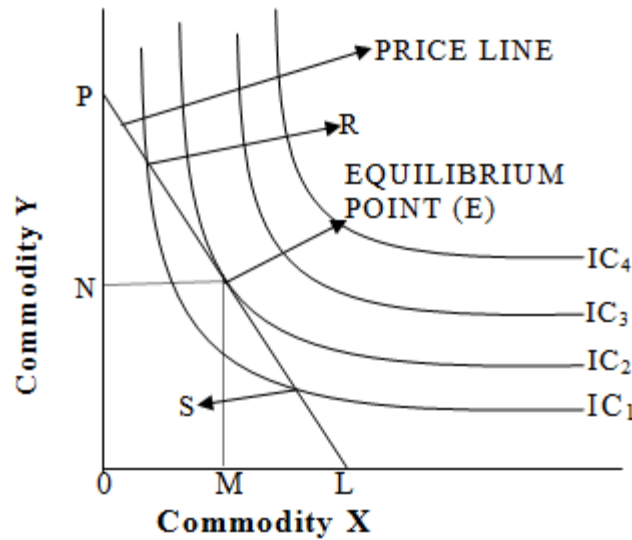


Fig. 2.8 Consumer's Equilibrium

Assumptions: In the indifference curve approach, the equilibrium position of the consumer is achieved under the following assumptions:

- The consumer has a given indifference curve map exhibiting his scale of Preferences for various combinations of two goods, X and Y.
- The consumer has a fixed amount of money to be spent on two goods. He has to spend the whole of his given money on the two goods.
- Prices of goods are given and constant for him.
- Goods are homogeneous and divisible.
- Tastes and preferences of the consumer remain constant.
- The consumer seeks maximum satisfaction.

CONSUMER'S SURPLUS

The concept of consumer surplus is **important in economic policies such as taxation by the government and price policy pursued by the monopolist seller of a product.** The essence of the concept of consumer surplus is that a consumer derives extra (or surplus) satisfaction from the purchases he daily makes rather than the price he actually pays for them. This extra satisfaction, which the consumer obtains from buying a good, has been called consumer surplus by Marshall. Thus, Marshall defines the consumer's surplus in the following words: **"Excess of the price which a consumer would be willing to pay rather than go without a thing over that which he actually does pay, is the economic measure of surplus satisfaction."**

The amount of money that a person is prepared to pay for a good indicates the amount of utility he derives from that good; the greater the amount of money he is willing to pay, the greater the satisfaction or utility he will obtain from it. Therefore, the marginal utility of a unit of a good determines the price a consumer will be prepared to pay for that unit. The total utility that a person will get from a good will be given by the sum of marginal utilities (ΣMU) of the units of goods purchased, and the total price that he will actually pay is equal to the price per unit multiplied by the number of units purchased. Thus:

Consumer's surplus = What a consumer is willing to pay minus What he actually pays

Consumer's surplus = Sum of marginal utility - (Price x No. of units purchased)

Measurement of Consumer's Surplus

The concept of consumer surplus is derived from the law of diminishing marginal utility. **The consumer attains an equilibrium position when he purchases the number of units of a commodity at which marginal utility is equal to the price.** This means that at the margin what a consumer will be prepared to pay (i.e., marginal utility) is equal to the price he actually pays (Price of the same commodity). But for the previous units, which he purchases, the marginal utility he gets is greater than the price he actually pays for them.

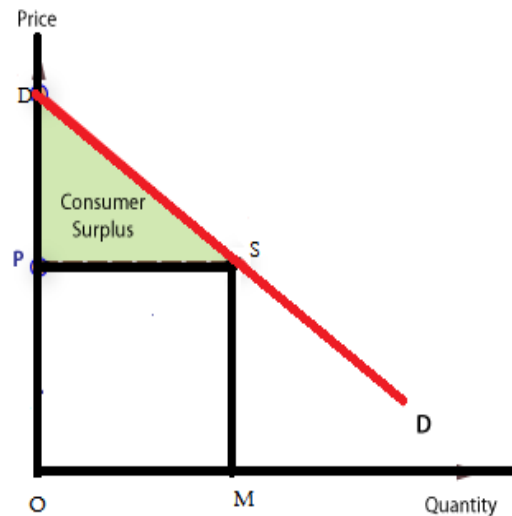
Table 3.4 Consumer's surplus:

Units	Total Utility	Marginal Utility	Price (Rs/Unit)	Consumer's Surplus
1	20	20	10	20-10 = 10
2	38	18	10	18-10 = 8
3	54	16	10	16-10 = 6
4	68	14	10	14-10 = 4
5	80	12	10	12-10 = 2
6	90	10	10	10-10 = 0
7	98	8	10	-
				Rs. 30

This is because the price is constant. In table 3.4, the **consumer is in equilibrium if he purchases 6 units of the commodity at which the marginal utility and price of the commodity are the same.** Then, the consumer's surplus is Rs.30 i.e., the difference between what he pays and what he is prepared to pay, is equal to (90-60) = 30.

$$\text{Consumer's Surplus} = \text{Total Utility} - \left\{ \text{Number of Units of a Commodity Purchased} \times \text{Price of the Commodity} \right\}$$

In the below figure, the total utility of OM units is equal to ODSM. But given the price OP, the consumer will actually pay for OM units of the good the sum equal to OPSM. It is thus, clear that the consumer derives extra satisfaction (utility) equal to (ODSM minus OPSM) DPS, which has been shaded in the figure.



Importance of Consumer's Surplus

1). Distinction between value-in-use and value-in-exchange:

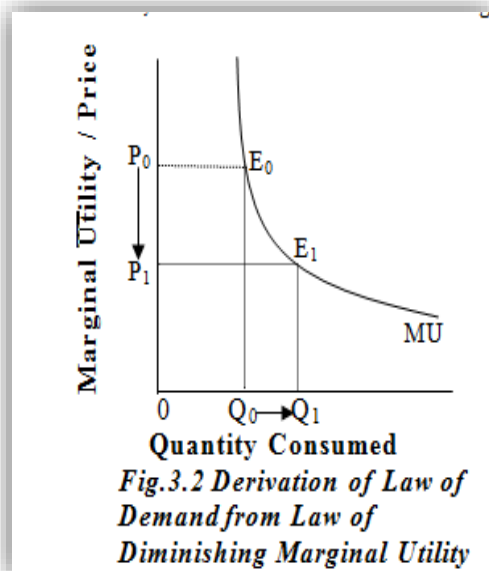
Value-in-use of a commodity signifies the utility or satisfaction it provides to the consumer, while value-in-exchange means the price paid by the consumer for the commodity. A commodity like salt has more utility but has only a small exchangeable value. In such cases, the consumer's surplus will be more. A commodity like diamond has only a limited utility but has a great exchange value. In this case, the consumer's surplus will be less. Thus, the concept of consumer surplus is used to distinguish between value-in-use and value-in-exchange.

2). Helpful to monopolists in price fixation: Monopolist fixes the price of a commodity in such a way that it bears at least a part of the consumer's surplus. However, he cannot absorb the whole of the surplus, as there may be opposition from the consumers.

3). Helpful to policymakers: The policymakers can impose the tax, if the consumer's surplus for a commodity is very high. Similarly, subsidy can be granted, if the consumer's surplus is low.

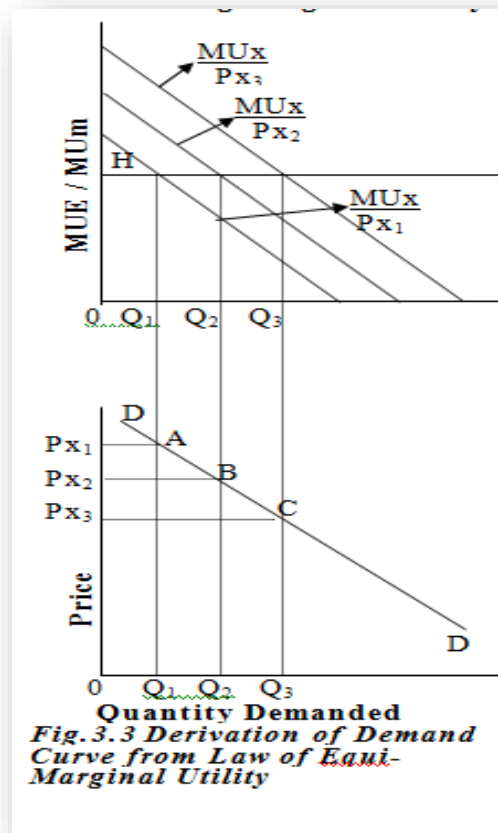
Derivation of Law of Demand from Law of Diminishing Marginal Utility and Law of Equi-Marginal Utility

The law of demand or the demand curve can be derived in two ways: firstly, with the aid of the law of diminishing marginal utility, and secondly, with the help of the law of equi-marginal utility. The law of diminishing marginal utility states that as the quantity of a good with a consumer increases, the marginal utility of the good to him expressed in terms of money falls. In other words, the marginal utility curve of a good is downward sloping. Now, a consumer will go on purchasing a good until the marginal utility of the good equals the market price. His satisfaction will be maximum only when marginal utility equals price. It, therefore, follows that the diminishing marginal utility curve implies the downward sloping demand curve, that is, as the price of the good falls, more of it will be purchased.



In Figure 3.2, the diminishing marginal utility of the good is measured in terms of money. Suppose, the price of the good is OP_0 and a consumer will be in equilibrium if he purchased OQ_0 , then the marginal utility is equal to the given price OP_0 . Now, if the price falls to OP_1 , the consumer would buy an OQ_1 quantity of good and the equilibrium would be shifted from E_0 to E_1 . To equate the marginal utility with the lower price OP_1 , the consumer must buy more of the good. Thus, there is an inverse relationship between the quantity demanded and the price of the good.

Now, we proceed to derive the law of demand from the law of equi-marginal utility. According to the law of equi-marginal utility, the consumer is in equilibrium regarding his purchase of various goods when marginal utilities of the goods are proportional to their prices. Thus, the consumer is in equilibrium when he is buying the quantities of two goods in such a way that it satisfies the following proportionality rule: $MU_X \div P_X = MU_Y \div P_Y = MU_M$



In figure 3.3, the marginal utility of money is OH. When the price of the good is P_{x1} , the consumer buys OQ_1 since at this quantity, the marginal utility of money is equal to the ratio of the marginal utility divided by price, i.e., MU_x/P_{x1}

Now, suppose, the price of the good falls from P_{x1} to P_{x2} , then, the demand will increase, i.e., the demand curve is shifted upwards. The quantity of demand must increase to OQ_2 because, only then the marginal utility of the money (OH) will be equal to the ratio of the marginal utility of the good and the price, i.e., MU_x/P_{x2}

Thus, we find that when the price of a good falls, the demand curve (MU_x / P_{x2}) shifts upwards and more of the good will be demanded. This is precisely the law of demand and therefore, it has been derived from the law of equi-marginal utility as explained above.

Lecture 7 - Elasticity of demand: Concept and measurement of price elasticity, income elasticity and cross elasticity. Factors influencing the elasticity of demand, Importance of elasticity of demand. Standard of Living: Definition, Engel's Law of Family Expenditure.

Elasticity of demand

The elasticity of demand is the measure of the responsiveness of quantity demanded concerning changes in the determinants of demand. **The elasticity of demand refers to the degree of responsiveness of quantity demanded to changes in variables such as price, income, tastes and preferences, price of substitutes, etc.** In general, the elasticity of demand means the price elasticity of demand.

Types of Elasticity

1. **Price Elasticity of Demand:** Price elasticity measures the **responsiveness of quantity demanded concerning price changes**, keeping other things constant.

It is the ratio of a proportionate change in quantity demanded in response to a proportionate change in price.

$$\begin{aligned} E_p &= \frac{\text{Percentage Change in Quantity Demanded}}{\text{Percentage Change in Price}} \\ \text{or in symbolic terms,} \quad E_p &= \frac{\left(\frac{\Delta Q}{Q} \times 100 \right)}{\left(\frac{\Delta P}{P} \times 100 \right)} = \frac{\left(\frac{\Delta Q}{Q} \right)}{\left(\frac{\Delta P}{P} \right)} = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q} \end{aligned}$$

Where, Q = quantity demanded of a commodity; P= Price.

Let us suppose that a consumer demands 10 oranges when its unit price is Rs.1. If its price falls to 95 paise, he demands 12 oranges. Now, the price elasticity of demand can be estimated as follows:

$$E_p = \frac{2/10 \times 100}{-5/100 \times 100} = \frac{20}{-5} = -4$$

As the price falls by 5 percent, the quantity demanded rises by 20 percent. Now, the coefficient of elasticity of demand is minus 4. Thus, it could be concluded that there is a four percent increase in the quantity demanded of oranges due to a one percent decrease in their price.

2. Income Elasticity of demand: Income Elasticity is a measure of the **responsiveness of quantity demanded to change in income.**

It shows how the quantity demanded will change when the income of the consumer changes, keeping other things constant

Luxuries have high-income elasticity and necessities have low-income elasticity.

Income Elasticity, E_i =	Percentage Change in Quantity Demanded <hr style="border: 0; border-top: 1px dashed black;"/> Percentage Change in Income
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Symbolically, E_i = $\frac{\frac{\Delta Q \times 100}{Q}}{\frac{\Delta Y \times 100}{Y}}$	$= \frac{\Delta Q}{Q} \times \frac{Y}{\Delta Y} = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$
---	---

Where, Q = Quantity demanded; Y-income

If, for instance, a consumer's income rises from Rs.1000 to Rs.1200, his purchase of the good X (say, rice) increases from 25 kgs per month to 28 kgs, then his income elasticity of demand for rice is:

$$E_i = \frac{3}{200} \times \frac{1000}{25} = 0.60$$

From this, we conclude that the quantity demanded of rice rises by 0.60 percent if the income of the consumer rises by one percent.

3. Cross Elasticity of demand: It refers to the **proportionate change in quantity demanded concerning the change in the price of the related commodity.**

The related commodity may be substitutes or complements

In the case of substitutes. (Tea and Coffee) The cross elasticity of demand is positive and large.

In the case of complementary goods (Tea and Sugar) the rise in the price of one commodity brings about a fall in the demand for the other (e.g. Car and Petrol) and hence it is negative.

$$\text{Cross Elasticity of Demand } E_c = \frac{\text{Percentage Change in Quantity Demanded of X}}{\text{Percentage Change in Price of Y}}$$

$$E_c = \frac{\frac{\Delta Q_x}{Q_x} \times 100}{\frac{\Delta P_y}{P_y} \times 100} = \frac{\Delta Q_x}{Q_x} \times \frac{P_y}{\Delta P_y} = \frac{\Delta Q_x}{\Delta P_y} \times \frac{P_y}{Q_x}$$

Where, Q_x = Quantity demanded of commodity X; P_y = Price of Y.

If the price of coffee rises from Rs 4.50 to Rs 5 per hundred gram and as a result, the consumer's demand for tea increases from 60 hundred grams to 70 hundred grams, the cross elasticity of demand can be estimated as follows:

$$E_T = \frac{10}{50} \times \frac{4.50}{60} = \frac{3}{2} = 1.50$$

It could be concluded that the quantity demanded of a commodity (tea) increases by 1.5 percent if the price of its substitute (coffee) rises by one percent. Therefore, **the cross elasticity of demand between the two substitute goods is positive**, that is, in response to the rise in the price of one good, the demand for the other good rises. Substitute goods are also known as competing goods. On the other hand, when the two goods are complementary to each other, as in the case of bread and butter, the rise in the price of one good brings about a decrease in demand for the other. **Therefore, the cross elasticity of demand between the two complementary goods is negative.** For example, if the price of bread rises from Rs 6 to Rs. 7 per loaf, the quantity demanded of butter decreases from 3 kgs to 2 kgs per month. The cross elasticity of demand for butter is:

$$E_{\text{Butter}} = \frac{\Delta Q_{\text{Butter}}}{Q_{\text{Butter}}} \times \frac{P_{\text{Bread}}}{\Delta P_{\text{Bread}}} = \frac{-1}{3} \times \frac{6}{1} = -2$$

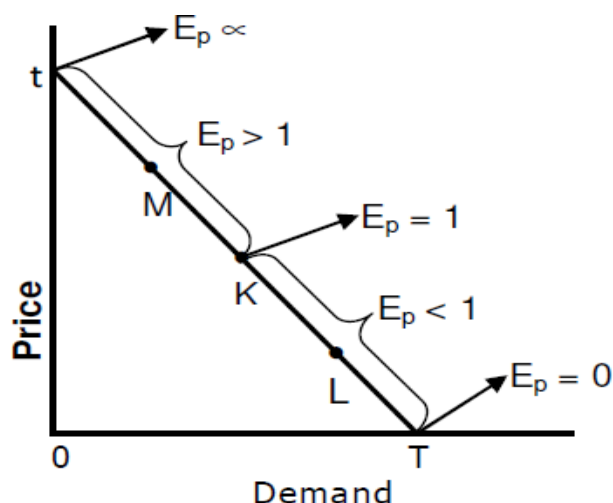
It could be concluded that the demand for butter decreases by two percent for a one percent rise in the price of bread.

Methods of Estimation of Elasticity:

1. Point elasticity of Demand.
2. Arc elasticity of Demand.
3. Total Expenditure or Total Outlay Method.

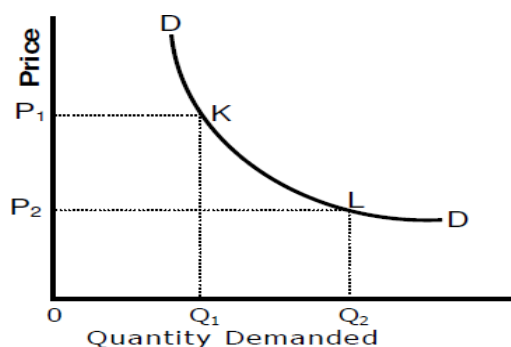
Point Elasticity of Demand:

It is a geometrical method for measuring **elasticity at a point on the demand curve. The point method is used when price and quantity changes are extremely small.** This method is applicable only when we possess information on **minute changes** in price and quantity.



A straight-line demand curve joining the two axes is considered to show the measurement of point elasticity. Elasticity at any point on the demand curve is the ratio of the lower part of the straight line to the upper part. It is important to note that the point elasticity of demand on a straight line is different at any point. At any point to the right of the midpoint (K), the point elasticity is less than unity. At any point to the left of the mid-portion is more than unity and at mid-point (K) the elasticity is unity. At the point where the linear demand curve intersects the Y axis (t) the point of elasticity is infinite, while at the point where the demand curve intersects the X axis (T), the point of elasticity is Zero.

Arc Elasticity of Demand:



$$e_p = \frac{\Delta Q}{(Q_1 + Q_2)/2} \div \frac{\Delta P}{(P_1 + P_2)/2}$$

$$e_p = \frac{\Delta Q(P_1 + P_2)}{\Delta P(Q_1 + Q_2)}$$

The price elasticity of demand measured between two distinct points on a demand curve is called arc elasticity of demand. This method uses the mid-point between the old and new data in

the case of price and quantity. It studies a portion of the demand curve between two points. An arc is a segment or a portion of a curved line. Arc elasticity is employed in order to compute price elasticity coefficient from the discrete data.

Total Expenditure or Total Outlay Method: (Refer to theory Notes)

S. No	Price (Rs/Unit)	Quantity (units)	Total Expenditure (Rs.)
1.	6.00	5	30
2.	5.00	10	50
3.	4.00	15	60
4.	3.00	20	60
5.	2.00	25	50
6.	1.00	30	30

(Refer to theory Notes for this table.)

In this method, we compare the total expenditure of the consumer before and after a change in price. The elasticity of demand is unity when the total expenditure remains unaltered even though, there is a price change. The demand is said to be elastic when the total expenditure increases with the fall in price and decreases with the price rise.

Inelastic demand is observed when the total amount spent on the commodity by the consumers increases in price and decreases with a fall in price.

Degrees of Elasticity of Demand:

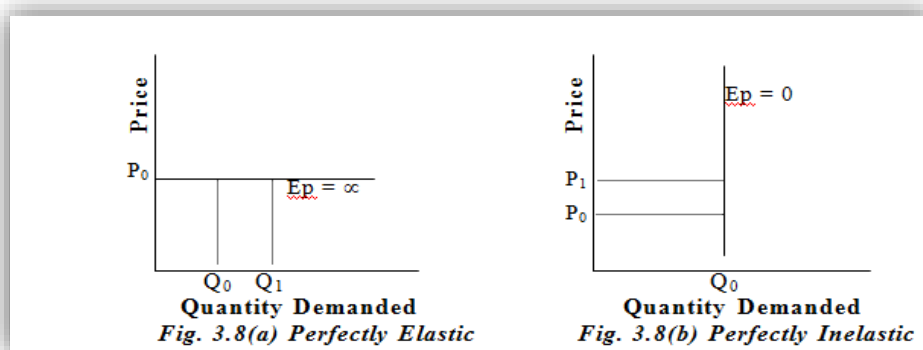
Based on the numerical value of elasticity demand is classified into five types.

1. Perfectly elastic demand or infinite elasticity ($E_p = \text{Infinite}$)

Even a very small change in price leads to a very large change in quantity demanded it is said to be perfectly elastic.

2. Perfectly inelastic demand ($E_p=0$)

If demand remains unchanged to any amount of change in price, demand is said to be perfectly inelastic.



3. Relatively Elastic demand (greater than one) $E_p > 1$

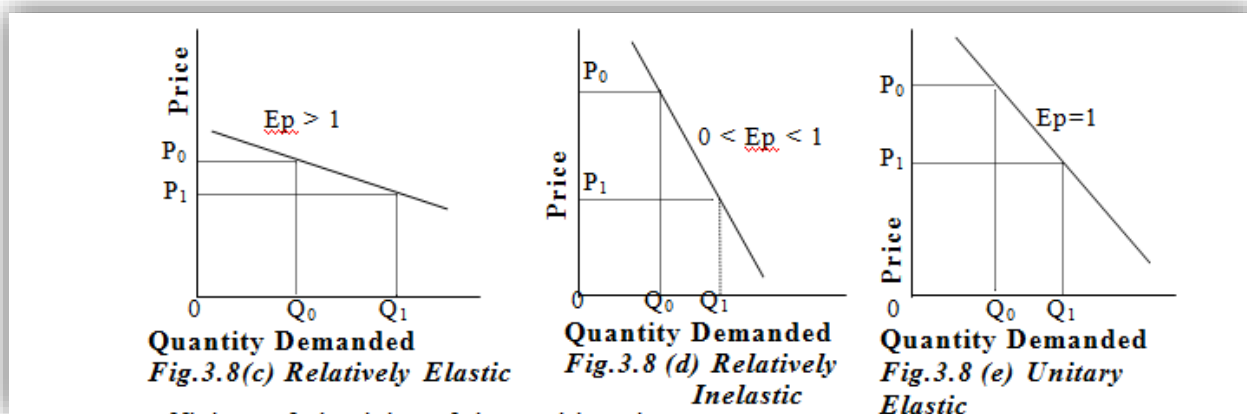
Demand is said to be elastic when the numerical value of elasticity is greater than one or unity. It means that the percentage change in quantity demanded is larger than the percentage change in price.

4. Relatively Inelastic demand (less than one) $0 < E_p < 1$

If the numerical value of elasticity of demand is less than one or unity, it is called inelastic demand. i.e. percentage change in quantity demanded is lesser than the percentage change in price.

5. Unitary elastic demand (Equal to one). $E_p=1$

When the numerical value of the elasticity of demand is equal to one is known as unitary elastic demand. It means that both price and quantity demanded to change in the same proportion.



Factors influencing Elasticity of Demand:

1. Nature of the commodity- Elastic for luxuries and comforts- A/C. Inelastic- necessities- salt.
2. Availability of substitutes- more elastic. Salt- no- inelastic.
3. Composite commodities-Elastic -Electricity- Lighting, cooking and heating.
4. Habits- Inelastic- Cigarette, liquor and drugs. Income- High income- Inelastic.
5. Urgency- Demands urgent- inelastic Postponed- elastic.
6. Complementary goods- Demand for petrol or diesel depends on the use of automobiles or water pumps.
7. Durability- Durable- Elastic- Furniture and washing machine Perishable- Inelastic- Milk and vegetables.
8. Own price of the commodity- Rise in price- demand contracts and fall in price- demand extends.
9. Income of the consumer- Demand for normal goods increases with the increase in income & vice-versa.
10. Demand for inferior goods like coarse grains increases with a decrease in income and vice-versa.
11. Expectations- Price rise- Purchase today Fall in price- Postpones his demand

Importance of Elasticity of Demand

1. Importance to a producer- Produce inelastic commodity- sell at a higher price. Produce elastic commodity- sell at a lower price. Monopolist practice price discrimination
2. Importance to Government- Inelastic- taxed more- It will not affect demand
3. Important in factor pricing- Inelastic factor- higher price. workers ask for higher wages if demand for products produced by them is inelastic
4. Importance in Foreign trade- Exporting commodities- inelastic- rise price- OPEC- Petrol
5. Public utilities- inelastic demand -Railways- subsidize or nationalize to avoid consumer exploitation

6. Proportion of expenditure- Proportion in income small- inelastic. Newspapers.
Proportion large- Elastic demand

Standard of living:

1. The standard of living depends on real income, not on money income.
2. With an increase in real income, the standard of living tends to increase.

Determinants of the standard of living

1. In general, the standard of living varies with the individuals but the consumption of the individuals in a group or class will conform to set pattern, which is unique to that particular group.
2. Thus, socio-economic factors like the class in which one is born, race, caste and community influence the standard of living.

Other factors are,

- Income of the family
- Size and composition of the family
- Price of commodities.

Family budget

- A family budget is a list containing the estimated expenditure of a family on each item.
- It may be prepared for a given level of income or the anticipated level of income.

Engel's Law of Family Expenditure

- Studies on the standard of living were conducted in different regions by different people.
- The pioneering study was conducted by Ernst Engel (1857). He is a German statistician.
- He considered three classes of people viz, Lower, middle and wealthy class.
- According to him, the best measure of the material standard of living among a population is the proportion of income spent on family needs.

- The results of his study can be grouped into four laws. These laws are commonly known as Engel's law of family budget or consumption.

Engel's Law on Family Expenditure

- As the family income increases the percentage of income spent on food decreases although the actual amount increases.
- The percentage of income spent on clothing varies only slightly from rich to poor.
- The percentage of income spent on fuel is the same for all the income groups.
- The percentage of income spent on education, recreation, health, etc. increases as income increases. It almost vanished in the case of low-income groups.

Implications of Engel's Law

- It clearly indicates the unfortunate conditions of low-income groups or poor people.
- They are unable to provide education to their children.
- They cannot spend on health, recreation, etc.
- They have to spend most of their income on food items. If any tax is levied on food items it affects the poor. It has a bearing on the payment of wages.
- If higher wages are paid they can spend some amount on education, recreation, health, etc. which will increase efficiency. This in turn increases production.
- Thus the knowledge of the standard of living will help in formulating effective policies for the welfare of the people

Exceptional demand curve- Giffen goods

- In general, the demand curve slopes downwards. But sometimes, the demand curve will rise upwards.
- In other words, the demand increases with a price increase.

- Sir Robert Giffen first investigated this.
- The Giffen Paradox holds that the demand increases when the price rises and vice versa.
- This behavior is observed in the following four cases.
- The good may be a necessary item for life.
- Expected shortage in the future.
- Adds prestige to the owner
- Out of sheer ignorance.

Lecture 8 - Production - Process, creation of utility, factors of production - definition and characteristics; Input-output relationship

Production:

Production is defined as the **creation of utility** or the **creation of want-satisfying goods and services**. In the economic sense, the products should have value not only utility. Hence production should be defined as not only the creation of utility but also the creation of value (added value). **Production is a process through which inputs/resources are transformed into outputs.** i.e., one set of goods converted to another set.

Factors of Production:

Productive resources or inputs which are required to produce a given product are called factors of production. These may be raw materials, services or capital. Fraser defines factors of production as a group or class of original productive resources.

Classification:

The factors of production are traditionally classified as **land, labour, capital and organization (enterprise)**. Some economists reduced this classification from four to two i.e., land and labour (man and nature) because they are the only original or primary factors.

Characteristics:

There are some important characteristics of the factors which have economic significance. They play an important role in production. Some economic production laws are developed based on the characteristics of factors of production, i.e., the law of diminishing return/ variable proportion returns to scale/law of substitution.

1. Substitutability
2. Complementarity
3. Specificity
4. Versatility.

1. Substitutability:

A factor can be a substitute for another factor in the production process without affecting the output. Machines can replace human labour in harvesting paddy. Machines can replace bullock pairs and human labour in land preparation.

2. Complementarity:

The factors are said to be complementary if the increase in the use of one factor leads to an increase in the use of another factor. The machine needs human labour to operate the machine. Here machine and labour are complementary factors. Human labour and capital have both supplementary and complementary characteristics.

3. Specificity:

A factor is said to be specific when it is used for only one purpose. E.g., spare parts of a particular machine.

4. Versatility:

A factor is said to be versatile when it can be put to every and any use.

LAND:

Characteristics:

- The term 'land' has been given a special meaning in Economics.
- It does not mean soil as in ordinary speech.
- But it is used in a much wider sense.
- According to Marshall, land means the materials and forces which are given by nature freely.
- Land stands for all natural resources which yield an income or which have exchange value.
- It represents those natural resources which are useful and scarce, actually or potentially.

Peculiarities of land:

- ❖ Land is nature's gift to man.
- ❖ Land is fixed in quantity. It is said that land has no supply price.
- ❖ Land is permanent
- ❖ Land lacks mobility in a geographical sense
- ❖ Land provides an infinite variation of degrees of fertility and situations so that no two pieces of land are exactly alike.
- ❖ This peculiarity explains the concept of marginal cultivation.
- ❖ These are a few peculiarities of land and they have a bearing on economic rent.

LABOUR:

Labour means any work, whether manual or mental which is done for a reward. Any work done for pleasure alone is not work.

Characteristics:

- Labour is inseparable from labourers.
- Labour is perishable. One day lost is lost forever. It can't be stored.
- Supply of labour changes slowly (supply of labour can't be increased all of a sudden since the children have to grow up or can't be reduced since labourers need money for a living).
- Labour is less mobile as compared to capital.

Aspects of Labour:

There are **two** aspects

i). Qualitative aspects / Efficiency of labour

ii). Quantitative aspects/number of labour (or) size of the working population.

Efficiency of Labour:

1. It refers to the amount of work that a labour can do within a given time

E.g., A person can weed 10 cents per day and another person can weed 8 cents per day.

2. The first person is more efficient than the second person.

Factors Determining Labour Efficiency:

- 1) **Race.**
- 2) **Climate** – In a Cool climate efficiency is more and in a hot climate less work and less efficiency.
- 3) **Standard of living** – The higher the standard of living more will be the efficiency of labour.
- 4) **Education** - The higher the level of education more will be the efficiency.
- 5) **Hours of work** – Long hours of work, with inadequate time for rest/relaxation will decrease labour efficiency.
- 6) **Working conditions:** Good light and ventilation in the workplace would increase efficiency.
- 7) **Level of wage** - The higher the wage, the more will be efficiency
- 8) Organization of the business, ability and skill of the manager, and use of modern equipment will influence labour efficiency.
- 9) **Labour Organisation** - if labour is properly (Labour union) organized their efficiency will be more.
- 10) **Welfare activities** – The provision of housing facilities, insurance benefits, and education facilities will increase labour efficiency.

Division of labour:

When making an article is split up into several processes and each process is entrusted to a separate set of workers, it is called division of labour

E.g., Pulling of seedlings, transporting seedlings and transplanting seedlings – if labour is allotted for each work efficiency will be greater and productivity will increase.

Advantages of Division of labour:

- Increase productivity.
- In Pin Making industry, there are 18 distinct operations. 10 men made 48000 pins/day and 1 worker made 4800 pins.
- In the absence of division of labour and Machinery, one could hardly have made 20 pins.
- Increase Skill – Practice makes a man perfect – He becomes an expert.
- Large – It also facilitates inventions and large-scale production is possible by saving time, machine tools and implements
- Right man into the right place. Workers are so distributed that each worker is put according to his ability.

Disadvantages of Division of labour:

- ❖ Monotonous work – workers lack interest in the work.
- ❖ Risk of unemployment. If he happens to lose his present job, he may not be able to get a similar job elsewhere immediately.

CAPITAL

- Capital is not an original factor like land.
- It is man-made.
- Man constructs capital equipment to help him in the production of other goods and services.
- Hence capital is known as produced means of further production.

The distinction between capital, Money, Wealth and Land:

1. Capital and money:

- Money is the means to buy goods and services.
- It can be used to buy consumer goods as well as capital goods. Money used to buy capital goods is also capital.

2. Capital and Wealth:

- Wealth includes both consumption goods and capital goods. Hence all capital is wealth and all wealth is not capital.

3. Capital and Land:

- Land is a gift from nature but capital is man-made.
- Capital is perishable whereas land is indestructible and permanent. Capital is mobile but land is immobile.
- The amount of capital can be increased but the quantity of land is fixed and limited.

Characteristics of Capital:

- ❖ It is man-made (artificial).
- ❖ It increases the productivity.
- ❖ Supply of capital is elastic. It can be produced more as the requirement is more.
- ❖ All capital is wealth.

Types of Capital:

1. Fixed capital

Fixed capital consists of goods used many times in production. Eg. Machines, tools. Circulating capital or working capital performs its function in production in a single use. Working is not available for further use. Eg. Raw cotton is used to spin yarn.

2. Sunk capital and flowing capital

Sunk capital is highly specialized. It can be used for one purpose or a limited number of purposes only. Eg. A Blast furnace used to produce steel.

Floating capital denotes capital that can be employed for any use. Eg. Money.

3. Social capital and private capital

Capital owned by individuals and from which individual derives income is called private capital. Eg. Private industries.

All those things from which the society derives income are called social capital,
e.g.. Bridge, dam.

Capital Accumulation or Formation:

1. Capital formation means the increase in the stock of real capital in a country.
2. The greater the addition to the capital stock, the faster will be the rate of economic growth.
3. To accumulate capital goods some current consumption has to be sacrificed.
4. Capital formation depends on saving.
5. Capital formation or savings in a society is influenced by,

1. Power to save 2. Will to save.

Power to save

It is directly related to the size of income of people. The larger the payment the greater will be the power to save.

Will to save

A person usually saves

To provide financial security during his old age and

To provide for his dependents, education, marriage, marriage, business.

Voluntary Savings:

Voluntary savings are those which people do on their own free will and it depends upon the power to save.

Government savings:

These include revenue obtained through taxes and surplus from public undertakings.

Phases of capital formation:

These are three phases in the process of capital formation.

Creation of savings:

Savings are created by spending less than one's income.

This depends on the rate of interest on savings the power to save and the will to save the people.

Mobilization of savings:

Banking institutions mobilize the savings of the people to distribute them for various investment purposes.

Conversion of mobilized money savings into new capital assets:

This is done by people who possess entrepreneurial ability.

The level of investment or capital accumulation in an economy is determined by the size of the market for the goods.

Foreign capital:

Capital formation in a country can also take place with the help of foreign capital.

Foreign capital can take the form of

- a) direct private investment by foreigners,
- b). loans or grants by foreign governments,
- c) international agencies like the World Bank.

ENTERPRISE:

1. An entrepreneur is the coordinator of all other factors of production.
2. He has to plan, organize and direct factors of production, arrange for marketing the produce and take risks and uncertainties.

Functions of Entrepreneur:

Function of initiation: The entrepreneur takes the initiative to start the business. He makes proper assessments of markets and decides upon what, when and how about production and marketing of a commodity.

Function of choice of location: He decides upon the particular place to locate the concern where facilities regarding production and marketing are available.

Function of co-ordination: The entrepreneur has to co-ordinate, direct and supervise the work of other factors of production.

Functions of innovation: The entrepreneur has to introduce new scientific findings, machines and tools in his concern.

The function of bearing risk and uncertainties: Sometimes there will be labour strikes. The price uncertainties are always there. The entrepreneur has to anticipate all these things and provide necessary alternatives for them.

Forms of Business Organisation:

By business organization, we mean either a trading concern or a producing unit. A business organization may be owned by a single person or by many people. Again, the primary aim of the business organization may be either earning profit or promoting general welfare.

Based on the above two, the business organization is classified as,

1. Individual Proprietary System:

A business organization owned by a single person is known as the individual proprietary system. In this case, personal attention to all customers is possible. However, large-scale production is difficult in this system.

2. Partnership:

- Two or more people combine, contribute capital and share profit or loss in agreed proportions.
- It establishes wider personal contacts and hence large-scale production is possible.

- The disadvantage here is the unlimited liability of each partner which makes the firm unenterprising.
- In India, the number of partners should not exceed twenty.

3. Joint stock enterprise:

- The joint stock company is owned by a large number of shareholders. They contribute to the share capital.
- They are entitled to get the profits of the company.
- They elect a board of directors among themselves.
- The board appoints one of its members as the managing director.
- The board directs and supervises the affairs of the company.
- The joint stock company is based on the principle of limited liability.
- That is each shareholder is liable for the debts of the company only up to the value of the share he has bought in that concern.
- His other properties cannot be attached by the creditors of the company.
(So, the investors invest freely and whenever he wishes to leave, he can sell the shares.)

Advantages:

1. The risk of shareholders is reduced as it is based on the principle of limited liability.
2. It facilitates large-scale production. It is very easy to raise capital.
3. It promotes research and development activities.

Disadvantages:

1. The directors are practically self-appointed and the shareholders do not have much influence in the decisions taken by the company.
2. Share capital is owned by the shareholders but risk-taking is done by the directors. This leads to fraudulent practices on the part of directors.

4. Co-operative enterprise:

1. It is a form of economic organization where people work together for a business purpose based on mutual benefit,

2. It is a voluntary organization designed to promote the economic interests of its members.
3. Members have equal rights.
4. The cooperative society has the motto of each for all and all for each.
5. Poor performance of the co-operative societies is due to poor organizational ability of the management.

5. Public undertakings

1. A commercial undertaking owned by the government is a public undertaking.
2. Public undertakings have been started for the following reasons.
3. To bring about rapid economic development.
4. To ensure that the benefits of development are shared by all the people and
5. Inability of private sectors to find vast amounts of capital needed for heavy projects.

Disadvantages:

1. If there is any loss, nobody is held responsible.
2. Inefficient management of the administrators results in loss or underutilization of resources.

INPUT-OUTPUT RELATIONSHIP:

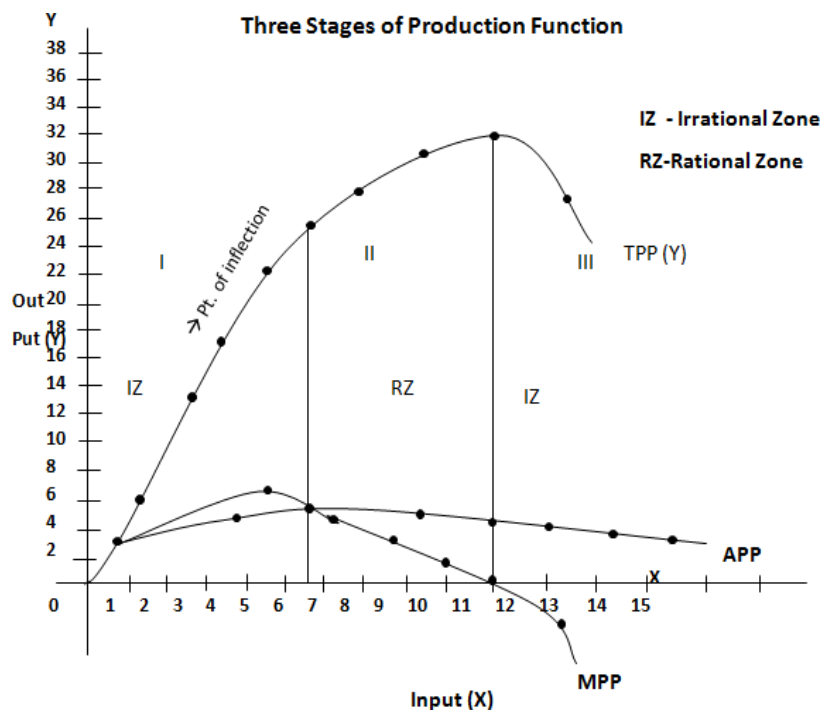
- ❖ The objective of the factor-product relationship is to determine the optimum quantity of the variable input that will be used in combination with fixed inputs to produce an optimal level of output.
- ❖ Further questions such as, how much fertilizer is to be applied per acre? how much irrigation is to be given? and so on are all within the scope of the factor-product relationship.
- ❖ There can be three types of input-output relationships in producing a commodity where one input is varied and the quantities of other inputs are fixed.
- ❖ The nature of relationships between a single input and a single output can either be of the one or a combination of types given below:
- ❖ Constant Marginal Rate of Returns or Law of Constant Returns.

- ❖ Increasing Marginal Rate of Returns or Law of Increasing Returns.
- ❖ Decreasing Marginal Rate of Returns or Law of Decreasing Returns.

Lecture 10 - Law of variable proportions, Law of returns to scale, Cost concepts and Cost curves, Total, average, and marginal cost concepts and curves short run and long-run cost curves.

Law of Variable Proportions or Law of Diminishing Returns:

An increase in capital and labor applied in the cultivation of land generally causes a less than-proportionate increase in the amount of product raised unless it coincides with an improvement in the art of agriculture (Alfred Marshall).



Stage 1:

1. This stage starts from the point of origin up to the point where MPP remains greater than APP.
2. APP increases through this region, indicating the inputs' efficiency. if the variable input keeps increasing.
3. TPP increases at an increasing rate
4. State I ends when APP is maximum or $MPP=APP$.

5. Elasticity of production (E_p) is more than unity, because MPP is greater than APP, up to the maximum average product. At maximum average product, E_p is one.

Point of inflection:

1. Point of inflection occurs in stage I, where the rate of increase in output starts to fall off and the production function becomes concave downwards.
2. When MPP is maximum, the corresponding point on TPC is called the point of inflection. The inflection point indicates the change in curvature of TPC.

Stage 2:

1. This stage is obtained when MPP is decreasing and is less than APP. i.e. $APP > MPP$.
2. Ends when TPP is maximum and MPP is zero
3. At the starting point of this stage $MPP = APP$ where E_p is one.
4. TPP increases at a decreasing rate
5. The optimum point of input use is in this rational region. This region embodies the diminishing phase region.
6. If the producer wants to maximize their profits, he must operate in region 2 of a production function.
7. Elasticity of production is less than one, but greater than zero between the maximum average product and maximum total product.

Stage 3

1. TPP decreases
2. MPP crosses zero point and becomes negative APP also decreases but it is still positive
3. It is not a profitable zone, an additional quantity of input reduces TPP E_p is less than zero as the total product declines
4. Double loss –Irrational zone.
5. Reduced production and Unnecessary additional cost of inputs

Summary of TPP, APP, and MPP Relationships:

MPP & TPP:

When MPP increases = TPP increases at an increasing rate

MPP is constant = TPP increases at a constant rate

MPP decreases = TPP increases at a decreasing rate

MPP is zero = TPP is the maximum

MPP is below zero and = TPP decreases negatively at an increasing rate

MPP is maximum = Inflection point on TPP curve

APP & TPP:

1. When $MPP > APP$ = APP is increasing
2. When $MPP < APP$ = APP is decreasing
3. MPP equals APP = APP is at maximum

Profit Maximizing Criteria under Factor – Product:

The two methods of defining maximum profits are,

(i). Profit from the use of factor is maximized when the marginal product is equated to the price ratio.

(ii). Profits are maximized for the fixed unit if the marginal value productivity of the factor is equal to the marginal cost.

Profits are maximum when

i). Marginal product = Factor – product price ratio

ii). Marginal cost (MC) = Marginal revenue (MR).

Both (i) and (ii) are identical.

Return to Scale:

1. Law of constant returns (Constant Marginal Productivity).
2. Law of increasing returns (Increasing Marginal Productivity).
3. Law of decreasing returns (Decreasing Marginal Productivity).

7 cost concepts:

1. Fixed Cost (FC)
2. Variable Cost (VC)
3. Total Cost (TC)
4. Average Fixed Cost (AFC)
5. Average Variable Cost (AVC)
6. Average (Total) Cost (ATC)
7. Marginal Cost (MC)

1. Fixed Cost (FC):

1. FC remains the same, irrespective of the level of production
2. Remains invariant in the short run
3. FC includes: Taxes, Insurance, Cess, and Depreciation on machinery, Implements, and tools Fixed cost is a straight line parallel to the X-axis

2. Variable Cost (VC):

1. VC are the costs of using the variable inputs
2. VC varies with the level of output
3. Known as second phase costs
4. Raw materials (inputs), Labour, Power, Repair & maintenance of machinery
5. Known as working costs, operating costs, direct costs, prime costs, circulating costs, and running costs.
6. The curve is inverse S-shaped because of the law of variable proportion. As output increases, TVC increases at a decreasing rate and then increases at an increasing rate.

3. Total Cost:

$$\text{Total Cost (TC)} = \text{TFC} + \text{TVC}$$

4. Average Fixed Cost (AFC):

1. AFC is the cost of fixed inputs required to produce one unit of output
2. $\text{AFC} = \text{TFC} / Y$
3. AFC is declining with increasing level of output
4. Continue to fall up to its maximum output
5. AFC is a hyperbola curve

5. Average Variable Cost (AVC):

1. AVC is the cost of variable units used to produce one output unit.
2. $\text{AVC} = \text{TVC} / Y$
3. Smaller output; higher the AVC
4. U-shaped curve
5. Reciprocal of APP curve
6. AVC varies with the level of production.
7. The shape of the AVC curve depends upon the shape of the production function.
8. Like AFC, AVC cannot be computed when the output is zero.
9. Average variable cost is inversely related to average physical product, i.e., when APP is increasing, AVC is decreasing.
10. When APP is maximum, AVC attains minimum (is at its lowest point).
11. When APP is decreasing, AVC is increasing.
12. AVC first falls due to economies of large-scale production and then rises due to diseconomies of scale in production.

Thus, as on a production function APP measures the efficiency of the variable input, for cost curves AVC provides the same measure

- (i). When AVC is decreasing, the efficiency of the variable input is increasing,

(ii). it is at a maximum when AVC is at a minimum

(iii). it is decreasing when AVC is increasing.

6. Average (Total) Cost (ATC):

$$ATC = TC / Y = (FC + VC) / Y$$

ATC can be computed in two ways,

1. By dividing total costs by output or by adding AFC and AVC.
2. The shape of the ATC curve depends upon the shape of the production function.
3. ATC decreases as output increases attains a minimum, and increases thereafter.
4. ATC is often referred to as the “unit cost” of production-the cost of producing one unit of output.
5. The initial decrease in ATC is caused by the spreading of fixed costs among an increasing number of units of output and the increasing efficiency with which the variable input is used.
6. As output increases further, ATC attains a minimum and begins to increase, as the increase in AVC can no longer be offset by the decrease in AFC.

Characteristics of Average Cost Curves:

1. The average fixed cost curve will continue to decline and never show upward movement because after the maximum product is achieved, inputs beyond this become irrational.
2. As production expands, the AVC keeps on declining. It reaches the lowest point and then bends upwards. At this point, the APP is the highest.
3. The average total cost curve has the same shape as AVC. The difference is that the lowest point in the case of AVC reaches earlier as compared to ATC.

7. Marginal Cost (MC):

1. MC is the change in total cost due to a change in output
2. $MC = \Delta TC / \Delta Y = \Delta TVC / \Delta Y$
3. Reciprocal to MPP
4. MC intersects AC and AVC at their minimum

5. Marginal Cost (MC)

Characteristics of Marginal Cost (MC):

1. As output increases, MC first falls due to more efficient use of the variable factor(s) of production and then it slopes upwards due to less efficient use of the variable factor(s).
2. Marginal cost is related to the marginal product in the same manner that AVC is related to AP.

Relationship Between Average and Marginal Cost:

The marginal cost has a definite relationship with ATC and AVC

(1). AVC and ATC curves will slope downwards and keep falling as long as the MC curve is below them. Conversely, AVC & ATC curves will move up when the MC curve is above them.

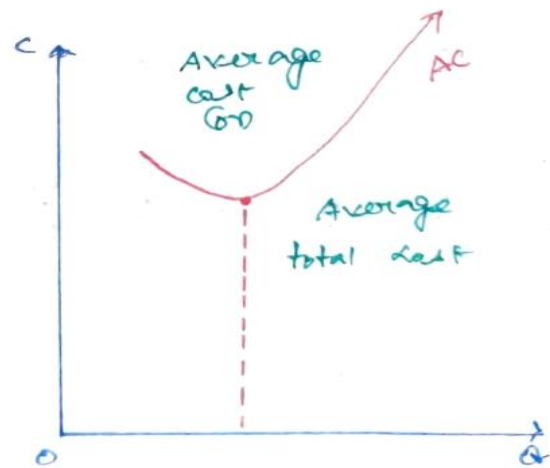
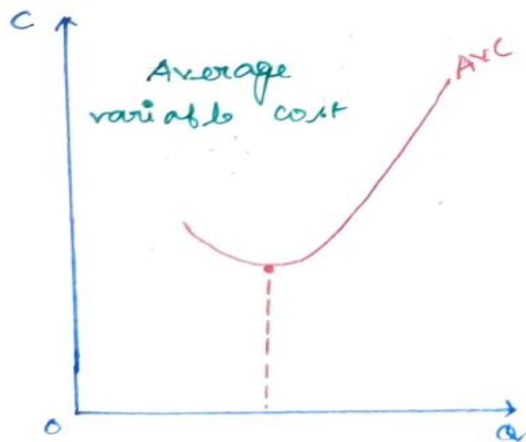
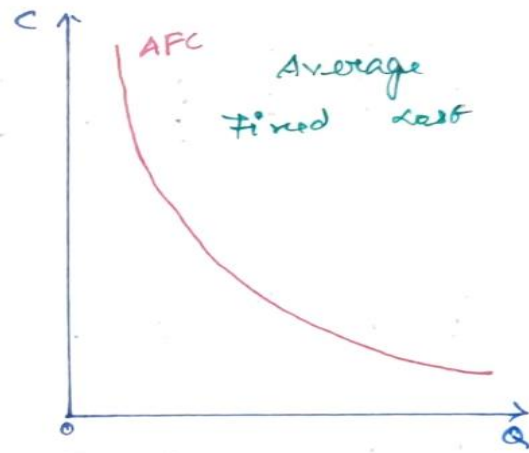
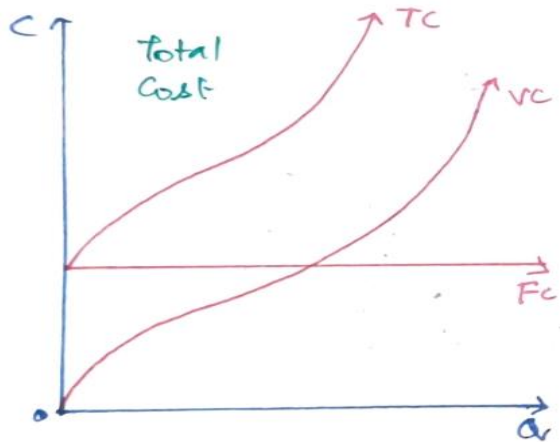
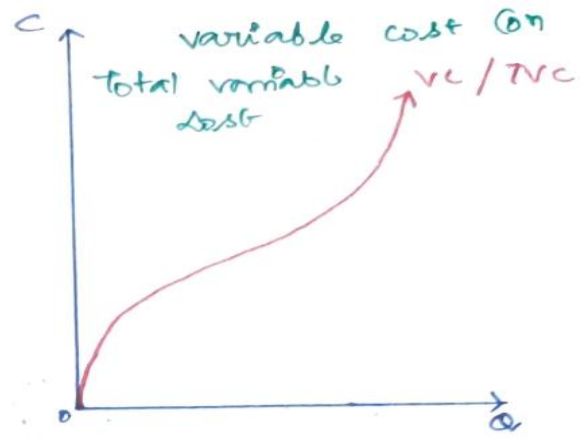
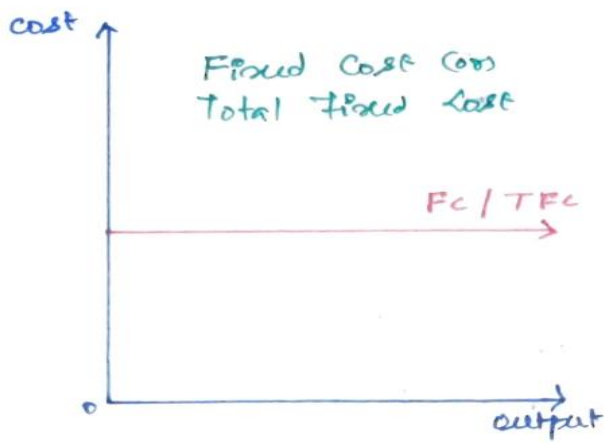
(2). The MC curve will intersect the AVC curve at the lowest point from below. MC curve moves on, it intersects the ATC curve from below at the lowest point.

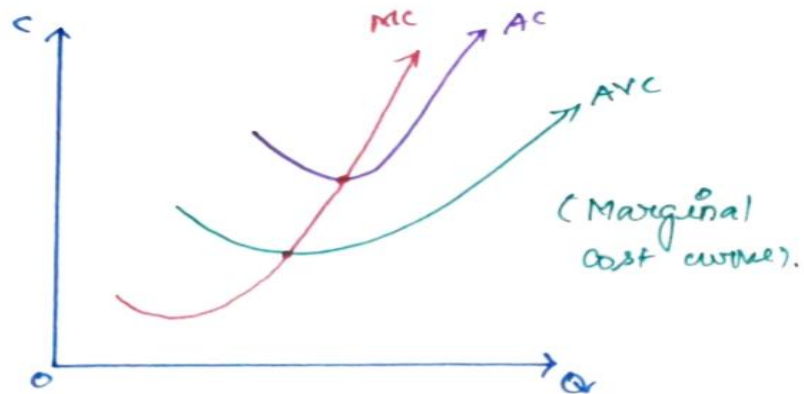
The only difference is that the MC curve intersects the AVC curve earlier than the ATC curve.

Long Run:

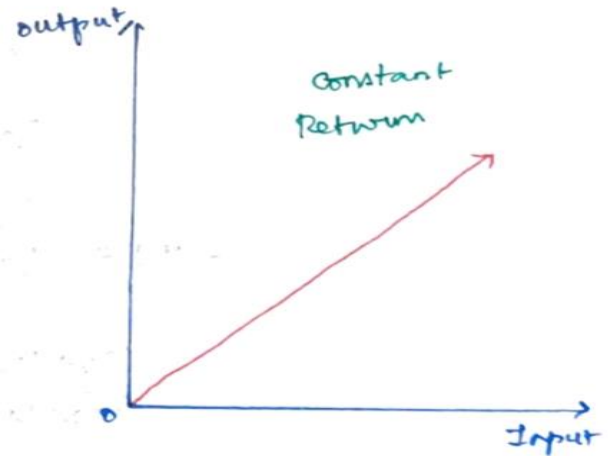
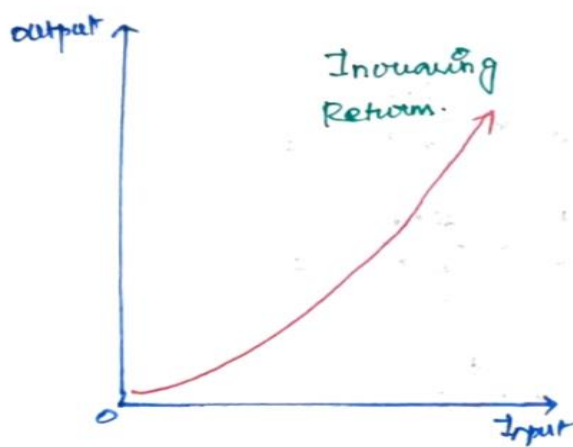
1. The long run is associated with the long-run average cost (LRAC) curve which a firm would minimize its average cost (cost per unit) for each respective long-run quantity of output.
2. Long-run marginal cost (LRMC) is the added cost of providing an additional unit of service or commodity from changing capacity level to reach the lowest cost associated with that extra output.
3. In the long-run equilibrium of an industry in which perfect competition prevails, the $LRMC = LRAC$ at the minimum LRAC and associated output.
4. The shape of the long-run marginal and average cost curves is determined by returns to scale.

Short Run Cost curves:





Returns to scale:



1. Increasing Return:

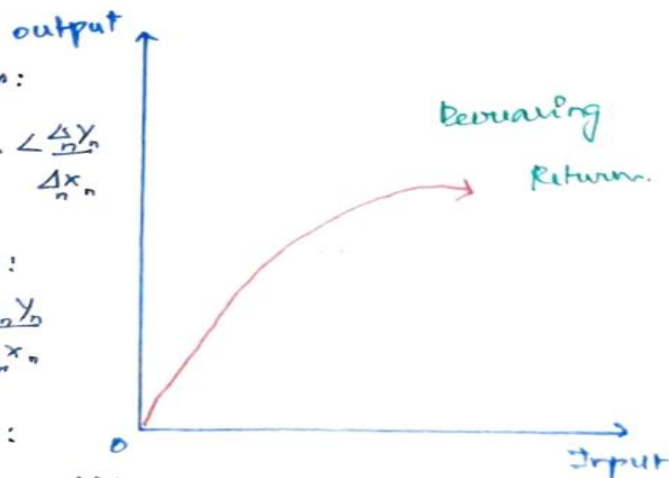
$$\frac{\Delta_1 Y_1}{\Delta_1 X_1} < \frac{\Delta_2 Y_2}{\Delta_2 X_2} \dots \frac{\Delta_n Y_n}{\Delta_n X_n}$$

2. Constant Returns:

$$\frac{\Delta_1 Y_1}{\Delta_1 X_1} = \frac{\Delta_2 Y_2}{\Delta_2 X_2} \dots \frac{\Delta_n Y_n}{\Delta_n X_n}$$

3. Decreasing Return:

$$\frac{\Delta_1 Y_1}{\Delta_1 X_1} > \frac{\Delta_2 Y_2}{\Delta_2 X_2} \dots \frac{\Delta_n Y_n}{\Delta_n X_n}$$



Lecture 11 - Supply: Stock vs. Supply, Law of Supply, Supply schedule, Supply curve, Determinants of Supply, Elasticity of Supply.

Supply:

Supply is the quantity of a good or service offered by a producer for sale at a certain price at a given time.

Law of supply:

- ❖ There is a positive relationship between the quantity of supply and its unit price.
- ❖ Other things remain constant, the higher the prices of a commodity, the larger the quantity supplied and the lower the price, the smaller the quantity will be supplied.

Supply schedule:

A schedule (tabular statement) showing the amount of a good that would be offered for sale at all possible prices during a part period.

Supply schedule

Price (Rs/Qtl)	Quantity offered for sale (Qtl / week)			Madurai Market supply (Qtls)
	Supplier 1	Supplier 2	Supplier 3	
300	30	35	-	65
325	40	50	-	90
350	50	65	50	165
375	60	80	70	210
400	70	95	90	255
425	80	110	110	300

Supply curve:

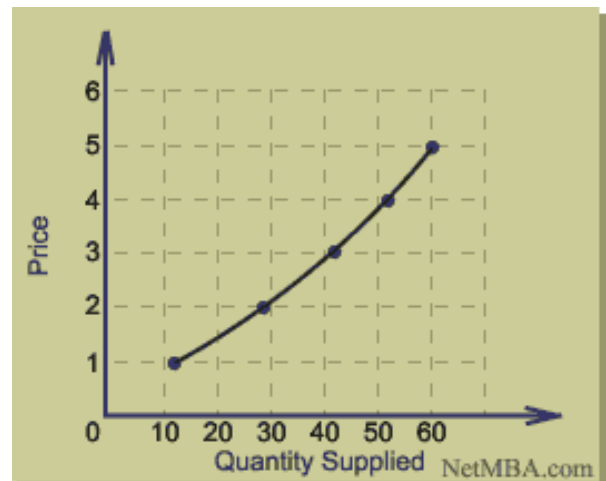
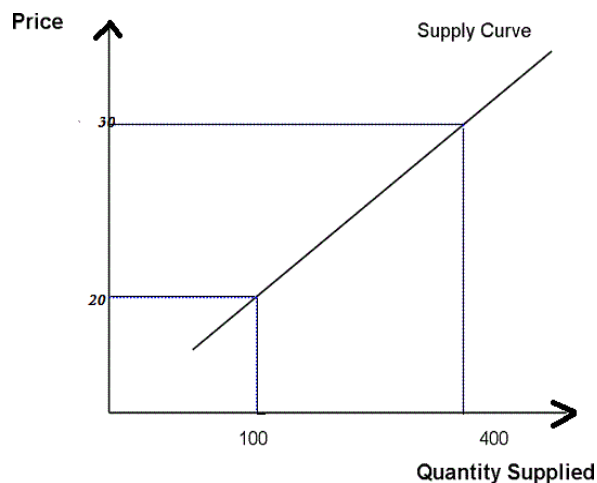
It is a graphical representation of the supply schedule. It shows the relationship between the quantity of goods offered for sale at different prices at a particular point in time.

Market supply:

The supply schedule for the whole market is called **industry supply or market supply**. It is arrived at by adding the quantities supplied by all the sellers at varying prices.

Supply curve:

- ❖ As the price of a commodity rises its supply extends and as the price falls its supply contracts, with other things remaining the same.
- ❖ Supply varies directly with price, *ceteris paribus*. Upward sloping curve from left to right



Stock:

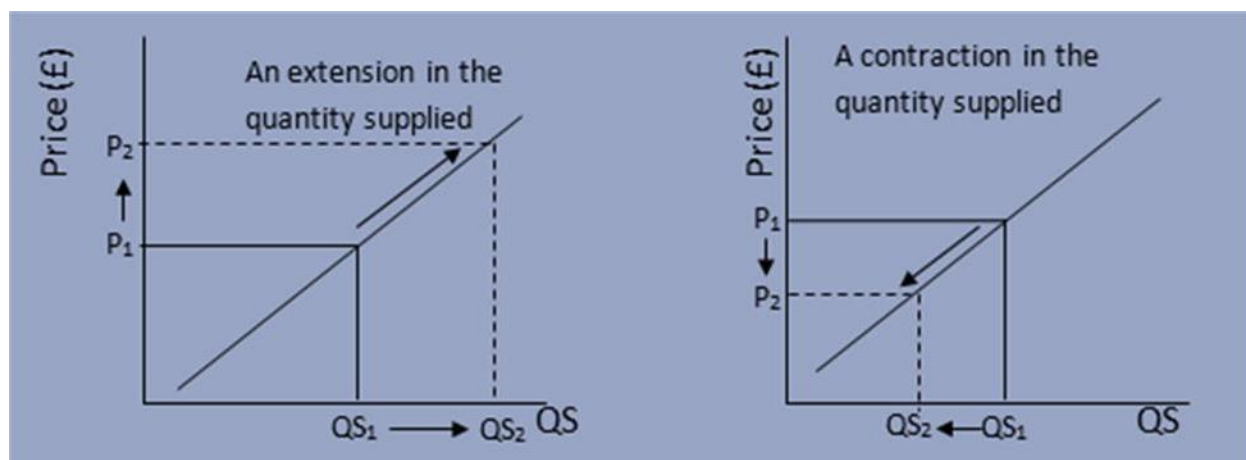
- ❖ The amount of output that exists in the market. The stock is converted into supply depending on the demand for a commodity.
- ❖ Supply is drawn from stock.

Extension and Contraction of Supply:

Extension of supply: When the price of a commodity increases its quantity supplied also increases it is called the extension of supply.

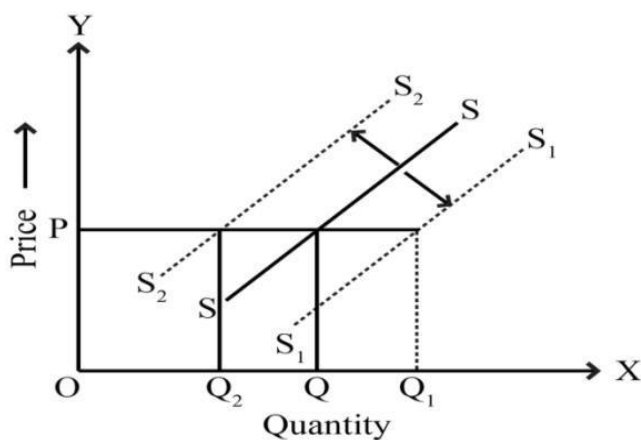
Contraction of Supply: In the opposite process, when the price of a commodity decreases, the quantity supplied of it also decreases it is called the contraction of supply. It leads to the law of supply.

Ex. Normal goods



Increase and Decrease in Supply:

When a change in supply occurs due to a change in any of the factors other than the price the supply curve is shifted upwards or downwards.



Prices of relevant inputs - if the cost of resources used to produce a good increases, sellers will be less inclined to supply the same quantity at a given price, and the supply curve will shift to the left.

Technological advances that increase production efficiency shift the supply curve to the right.

Factors influencing supply:

1. The cost of factors of production:

- ❖ When the cost of raw materials increases, the supply decreases.

2. The state of Technology:

- ❖ Improvement in technology lowers the cost of production and increases the supply.
- ❖ Factors like flood and drought will decrease the supply.

3. Taxes and subsidies:

- ❖ Higher taxation will decrease the supply and granting subsidies will raise the supply.

4. Price of commodity:

- ❖ When the Price of one commodity increases, its supply also increases.

5. Price of related goods:

- ❖ When the price of (Complementary) goods increases the supply of other goods declines **e.g. Steel and wooden chairs.**

The elasticity of Supply:

The elasticity of supply of a commodity is the responsiveness or sensitiveness of supply to changes in price. Supply is said to be elastic if a small change in price causes a considerable change in the quantity supplied.

$$\text{Elasticity of Supply} = \frac{\text{Percentage change in the quantity of goods supplied}}{\text{Percentage change in Price of goods supplied}}$$

Types of Elasticity of Supply:

Based on the numerical value of Elasticity of supply it is classified into five types,

1. Elastic supply (Greater than unity):

The numerical value of the elasticity of supply is more than one, which is referred to as elastic supply. **i.e.**, a one percent change in price would result in more than one percent change in quantity supplied.

2. Inelastic supply:

If the numerical value of elasticity is less than one of is known as an inelastic supply. It means that a lesser proportionate change in the quantity of supply is due to a price change.

3. Unitary elastic supply:

The supply of a commodity is said to be unitary elastic when the elasticity of supply is equal to one. It indicates that a one percent change in the price of a commodity would result in a one percent change in the quantity supplied.

4. Perfectly inelastic supply:

If the numerical value of the elasticity of supply is zero the supply is said to be perfectly inelastic. **i.e.**, supply remains unchanged to any amount of price change.

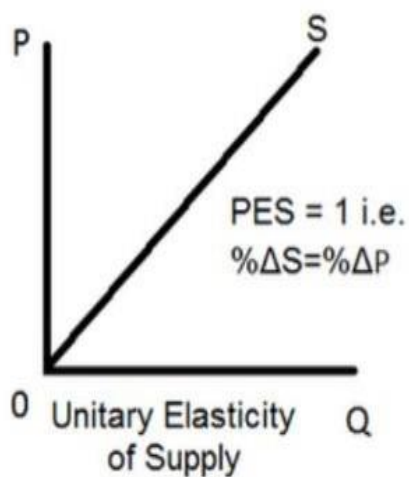
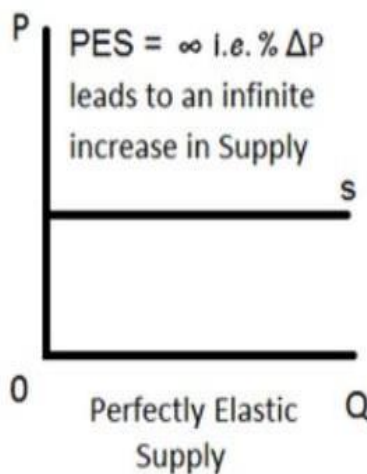
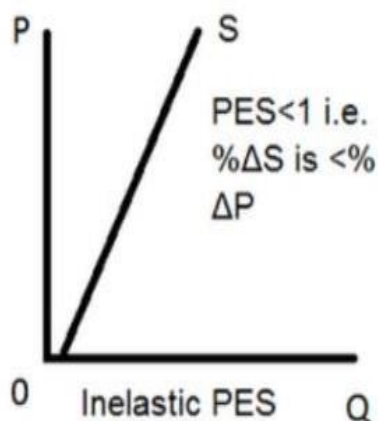
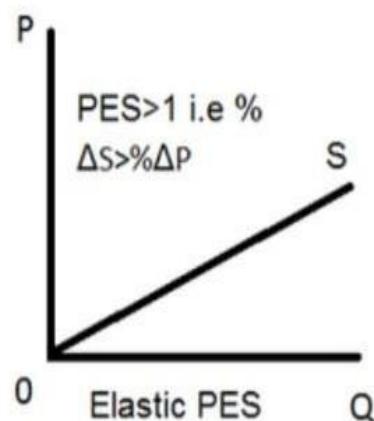
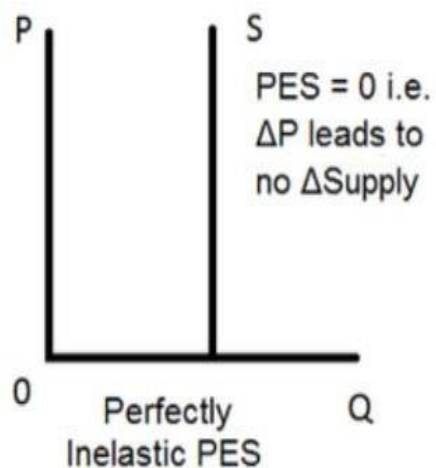
5. Perfectly elastic supply:

The supply is perfectly elastic if a very small change in price results in an infinitely large change in the quantity supplied.

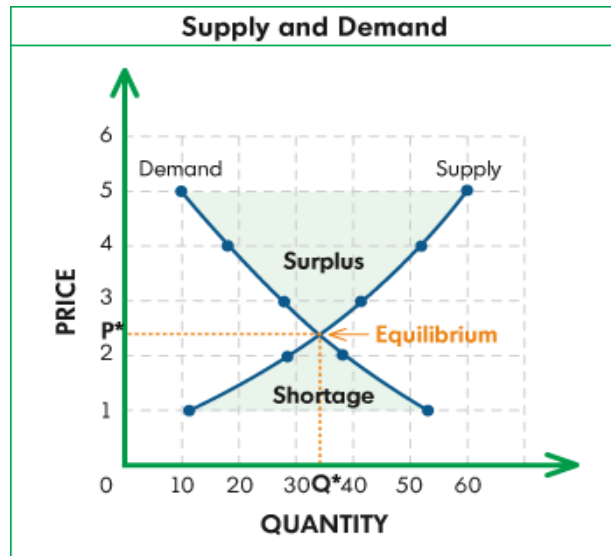
Application of Law of Supply to Agriculture:

- ❖ It helps in deciding the area allocation for different crops through the price mechanism.

- ❖ It helps the consumer in purchasing commodities at reasonable prices.



Price Determination: (Market equilibrium or Equilibrium Price):



Lecture 12 - Market Structure: meaning and types of market. The basic feature of a perfectly competitive and imperfectly competitive market. Price determination under perfect competition Price.

Market:

The word Market comes from the **Latin** word “**Marcatus**” which means merchandise or “trade”.

The market is not any particular market place in which things are bought and sold but the whole of any region in which buyers and sellers are in such free interaction with one another.

Thus, the essentials of a market are:

1. A commodity that is dealt with
2. The existence of buyers and sellers
3. A place, be it a certain region, a country, or the entire world
4. Such interaction between buyers and sellers that only one price should prevail for the same commodity at the same time.

Market structure:

Market structure refers to those organizational characteristics of a market, which influence the nature of competition and pricing and affect the conduct of business firms.

Components of market structure:

1. Concentration of Market Power:

This is measured by the number and size of firms existing in the market. Extent of concentration represents the control of an individual firm or a group of firms over the buying and selling of produce. A high degree of market concentration restricts the movement of goods between buyers and sellers and creates a situation of oligopoly in the market.

2. Degree of Product Differentiation:

The homogeneity or heterogeneity affects market structure. If homogeneous, price variation in the market is not wide. If heterogeneous, firms charge different prices for products by proving their product as superior.

3. Condition for Entry of Firms in the Market:

Big firms do not allow small firms to enter or make their entry difficult by dominance in the market. Also, government restrictions on firms.

4. Flow of Market Information:

Market information helps buyers and sellers to interact freely in arriving at prices and striking deals.

5. Degree of Integration:

The behavior of an integrated market differs from unintegrated market in its activities.

Perfect Markets – Based on the competition:

1. There is a large number of buyers and sellers
2. All the buyers and sellers in the market have perfect knowledge of demand, supply, and prices. Prices at any one time are uniform over a geographical area, plus or minus the cost of getting supplies from surplus to deficit areas.
3. Intra-year price not more than storage cost
4. The prices of different forms of a product are uniform, plus or minus the cost of converting the product from one form to another.

Perfect Competition:

1. A large number of buyers and sellers
2. Homogenous products

3. Free entry and exit of firms
4. No government regulations
5. Perfect mobility of resources
6. Perfect knowledge

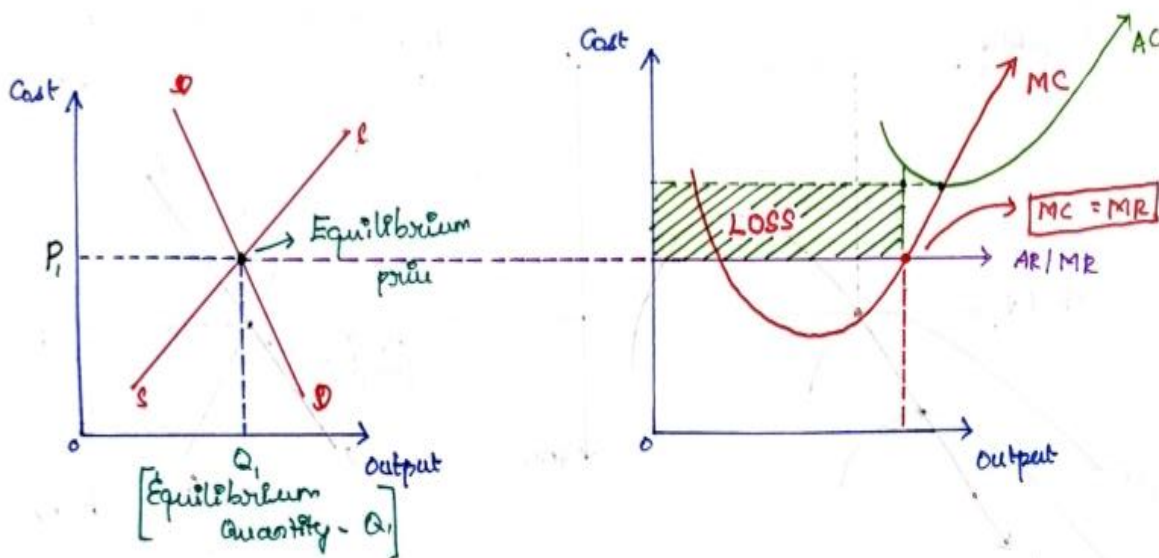
Perfect competition (Loss, Normal profit and Super – Normal profit):

To determine the loss, Normal profit and Super – Normal profit in a perfect competition, certain criteria should be needed. 1. The price (Equilibrium price) of the goods or services is taken from the market forces because of price takers (Based on demand and supply). So, no one can change the price of goods and services in a perfectly competitive market. 2. The marginal cost curve may cut the Average cost / Marginal cost / Price line at two different points. We should consider the point where the MC curve cut the AR/MR/P line from below, then it should increase. ($MC = MR$). After that, Normal profit, profit and supernormal profit were determined by the AC curve.

If a firm gets a loss:

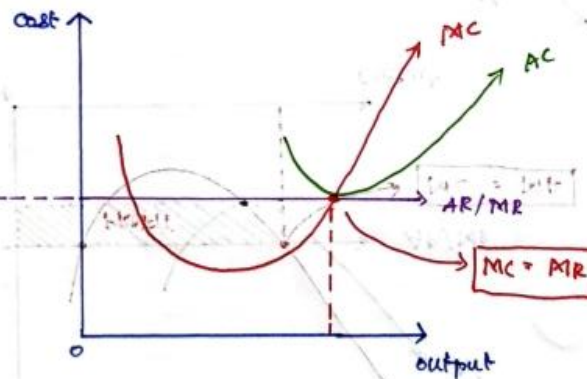
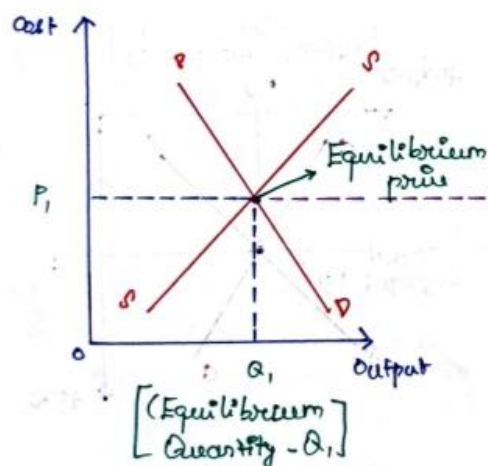
LOSS = AR is less than AC.

The minimum point of the AC curve should be above the AR/MR/P Line.



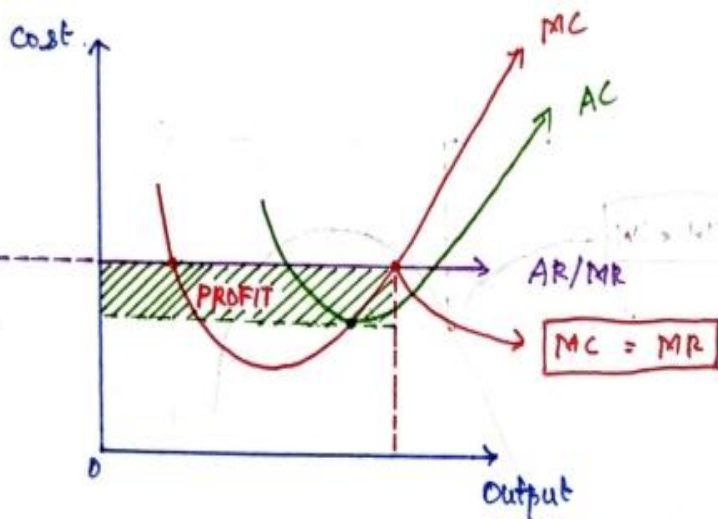
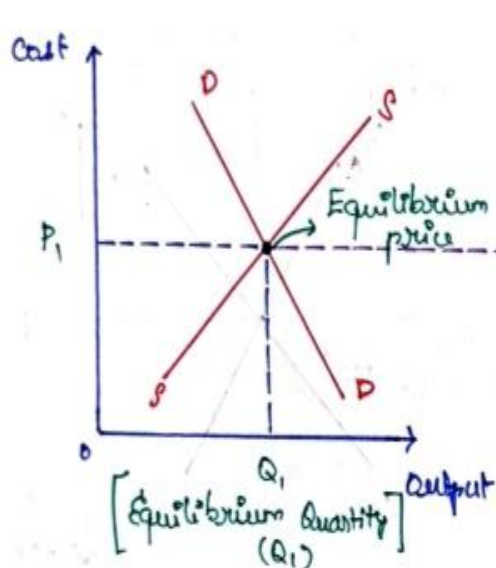
Normal Profit (No loss No profit):

AR is equal to AC. The minimum point of the AC curve should tangent the AR/MR/P Line.

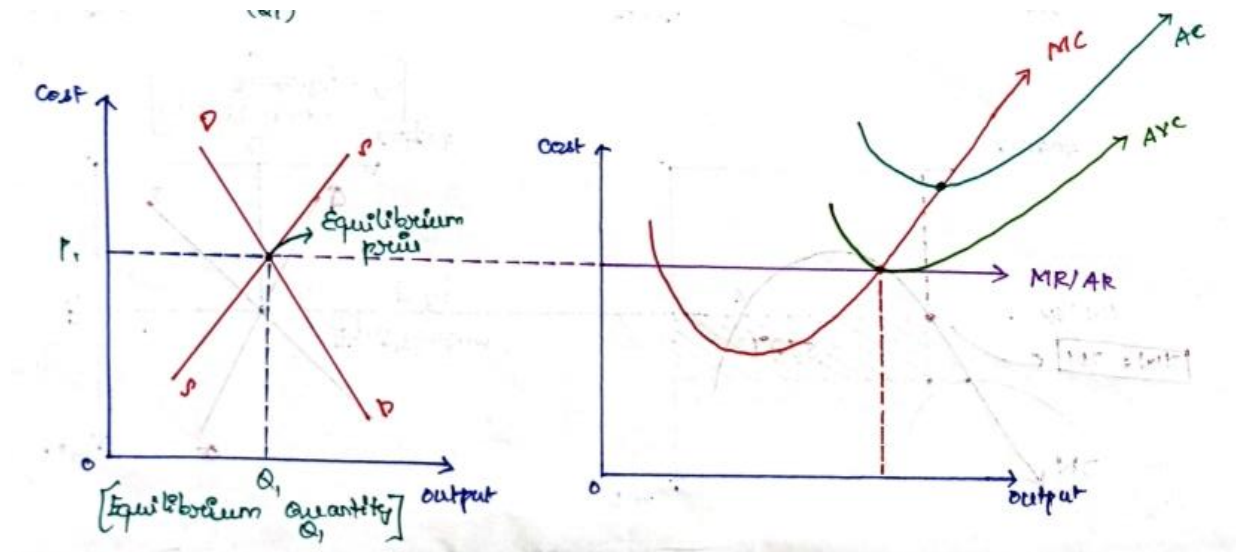


Super – Normal Profit:

AR is greater than AC. The minimum point of the AC curve should be below the AR/MR/P Line.



Even if a firm makes a loss in the short run, it can continue the business when the AR covers the AVC.



In the short run, a firm can make a Profit, Super normal profit and Loss in a perfect competitive market. In case of long run, the firm only gets Normal profit.

Imperfect Markets:

The markets in which the conditions of perfect competition are lacking are characterized as imperfect markets.

1. Monopoly Market:

1. A market situation in which there is only one seller of a commodity.
2. He exercises sole control over the quantity or price of the commodity.
3. In this market, the price of a commodity is generally higher than in other markets.
4. Indian farmers operate in a monopoly market when purchasing electricity for irrigation.
5. When there is only one buyer of a product the market is termed a monopsony market.

2. Duopoly Market:

1. A duopoly market has only two sellers of a commodity.
2. They may mutually agree to charge a common price that is higher than the hypothetical price in a common market.
3. The market situation in which there are only two buyers of a commodity is known as the duopsony market.

3. Oligopoly Market:

1. A market in which there are more than two but still a few sellers of a commodity is termed an oligopoly market.
2. A market having a few (more than two) buyers is known as an oligopsony market.

4. Monopolistic Competition:

1. When a large number of sellers deal in a heterogeneous and differentiated form of a commodity, the situation is called monopolistic competition.
2. The difference is made conspicuous by different trademarks on the product.
3. Different prices prevail for the same basic product.
4. Example- insecticides, pump sets, fertilizers, and equipment.

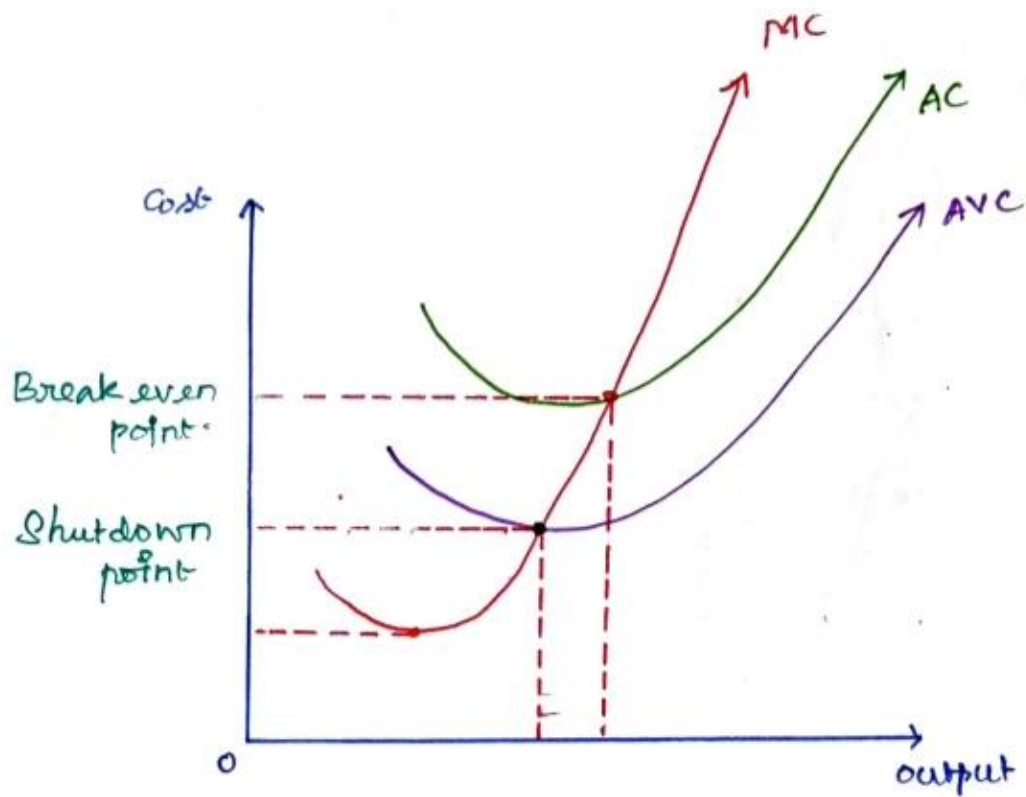
Breakeven point and Shut down point:

Breakeven point:

The break-even point is the point at which total cost and total revenue are equal, meaning there is no loss or gain for your small business. A break-even analysis is an economic tool that is used to determine the cost structure of a company or the number of units that need to be sold to cover the cost. Break-even is a circumstance where a company neither makes a profit nor a loss but recovers all the money spent.

Shut down point

A shutdown arises when price or average revenue (AR) falls below average variable cost (AVC) at the profit-maximizing output level. Continued production will incur additional variable costs but will not generate enough revenue to cover them. At the same time, the firm will still have fixed costs to pay, further increasing the losses.



Lecture 13 - Distribution theory: Meaning, factor market, and pricing of factors of production.
Concepts of Rent and Quasi rent Wages: Real wage and money wage Interest: Pure interest and gross interest Profit: Meaning of economic profit. Distribution

Distribution:

It is concerned with the sharing of the fruits of production, among the factors of production.

Factor Market

1. Use of land
2. Services of labor
3. Use of capital
4. Service of entrepreneur

Primary Factors

Land and Labour

Man-made factors

Capital and Organization

Factor Pricing:

- Rent is the price for use of land
- Wage is the price for services of labor
- Interest is the price for use of capital
- Profit is a reward for the services of the entrepreneur

Rent & Quasi Rent:

- **Gross rent:** A sum paid by the tenant to the landlord for the lease of land /building
- **Quasi rent:** (Marshall) The additional income derived by a factor (other than land) such as machinery, which is similar to rent.
- Quasi-rent is a temporary income earned by a temporary shortfall in the supply of factors. It is a short-run concept.
- Quasi-rent is the return over variable cost. It is the payment for man-made factors

Determination of Rent or Ricardian Theory of Rent – Concept of Rent:

- ❖ David Ricardo defined rent as ‘that portion of the produce of the earth which is paid to the landlord for the original and indestructible powers of the soil’.
- ❖ According to Ricardo, rent is the surplus over the cost of cultivation.
- ❖ It is the difference between total revenue and total cost and hence it is referred to as differential surplus.
- ❖ Rent is the payment for the land.
- ❖ It exists both in the short and long run because the land is fixed.

Assumptions:

- ❖ Land differs in fertility. According to fertility he classified the land as Grade I, Grade II and Grade III land. ‘Grade I is the most fertile land, Grade II is more fertile land and the least fertile land is grade III. Most fertile lands are limited in supply.
- ❖ Grade I land is taken up for cultivation first and then Grade II and Grade III.
- ❖ Cost of cultivation of these lands is the same:

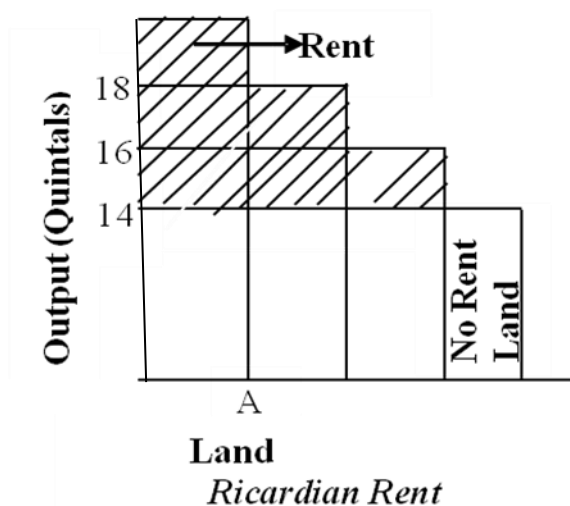
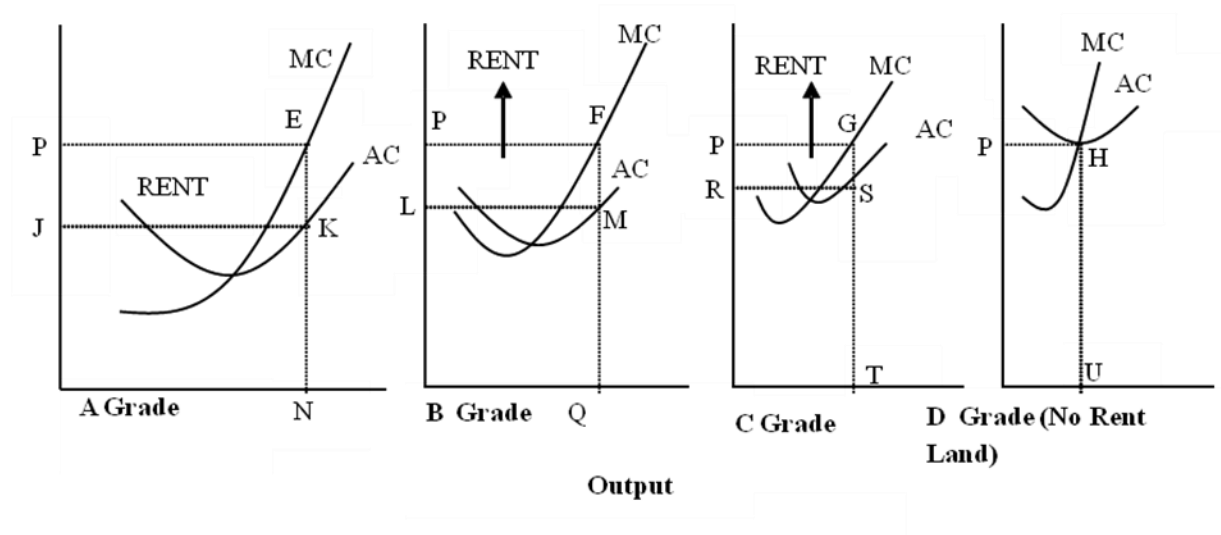


Illustration:

	Grains output	Price	Value	Cost	Rent
Grade I	3000	I	3000	1000	2000
Grade II	2000	I	2000	1000	1000
Grade III	1000	I	1000	1000	0

- For Grade III land, there is no surplus. Hence it is called marginal land or no-rent land.
- Grade I and Grade II are called Intra marginal land since there is a surplus over the cost of cultivation.
- If the price of the commodity (P_y) decreases, the rent will also decrease. Hence the rent is determined by the price of the output.



Criticisms:

- Fertile land may give low returns if it is not managed properly.
- Fertile land will lose its fertility if it is used constantly.
- Hence manures and fertilizers are applied.
- So land has no indestructible power.

Real wage and money wage:

Wage: Payment made for the use of labor, both mental and physical in the production of goods and services

Piece wages: Payment according to the work done

Time wage: Payment according to the duration

Money wage (nominal wage): The amount of money paid as a wage

Real wage: If it is paid as kind it is nominal wage / Real wage.

The number of necessities, comforts and luxuries that labor can obtain with a money wage
Standard of living depends on his real wage and not on money wage.

Wage theories:

1. Wage Fund Theory by J.S.Mill:

Wage depended on 2 factors

- Wage fund. It means a certain amount of capital is available in an economy for the purchase of labor.
- Several laborers seeking employment.

2. Marginal Productivity Theory:

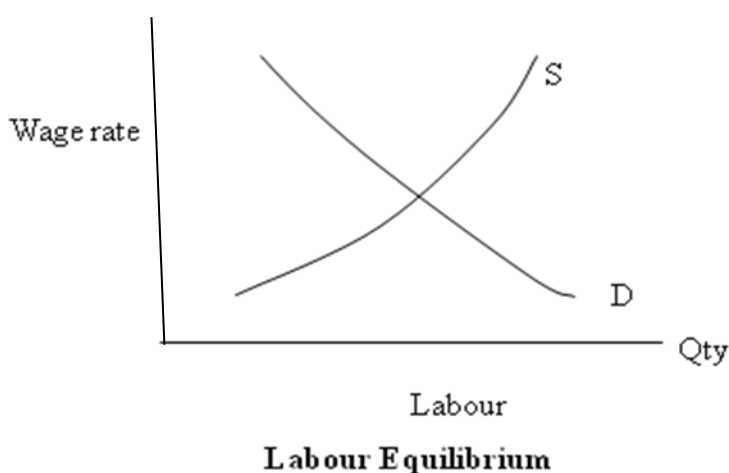
This theory says that under perfect competition wages will be equal to the value of the marginal product of the labor

Assumptions:

- ❖ Perfect competition in the labor market
- ❖ Perfect mobility of labor
- ❖ Homogeneity in skill and efficiency.

Demand and Supply Theory (Modern Theory of wage):

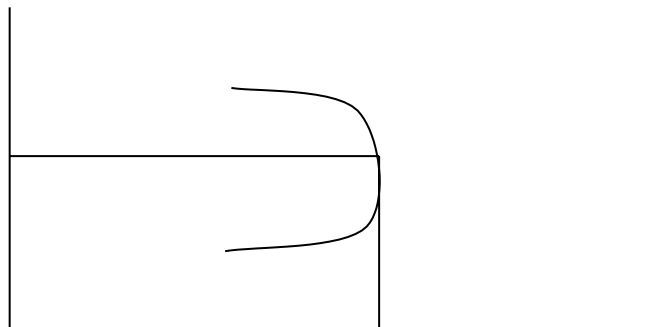
1. Modern theory of wage says the interaction of demand and supply of labor determines the wage. Demand for labor is a derived demand i.e. demand for labor is derived from the demand for the commodities it produces.
2. Supply of labor depends on the number of workers who are willing and able to work at different wages and income – leisure preferences.
3. Wage rate is determined at the point where demand equals supply.



Backward bending supply curve:

When workers' income is very low and when the wages are increased suddenly, they may prefer more leisure and hence the supply may reduce, giving a backward bending supply curve.

Backward bending supply curve



Pure interest and gross interest:

- a. Interest:** The reward paid to the use of capital in the production of goods and services
- b. Pure interest (net interest):** Payment purely for the use of capital.
- c. Gross interest:** The interest collected by the lender from the borrower.
Includes pure interest, payment for risk, wages for management, accounting, and collection, and cost of legal proceedings.
- d.** To meet all these things, the lender charges something more than pure interest.

Theory of interest rates:

- 1. Classical- Savings-investment theory
- 2. Neo-classical- Loanable fund theory
- 3. Keynes- Liquidity preference theory Transaction, precautionary and speculative
- 4. Modern- IS-LM curve

Profit:

Reward paid to the entrepreneur for the functions rendered in production activity

Gross Profit:

The total amount of money that the entrepreneur received (includes rent for land that belonged to him, interest for his capital, wages for his function, price gains, windfall profits, the incentive to novelty, money earned by bearing risk & uncertainty)

Gross income – explicit costs. (Eg.) Cost of raw materials, labor charges, rent paid, interest paid
– explicit cost means actually and visibly paid costs.

Net Profit:

The reward received by the entrepreneur purely for entrepreneurial function (bearing risk and uncertainties)

(Pure profit or economic profit) = Total revenue – explicit cost - implicit cost.

Meaning of economic profit:

Accounting profit:

$$\text{AP} = \text{Value of sales} - \text{rent} - \text{wages} - \text{interest} \\ (\text{explicit costs})$$

Economic Profit: (EVA: Economic value added)

$$\text{EP} = \text{Accounting profit} - \text{the cost of equity capital} \\ (\text{implicit costs}) \text{ opportunity cost}$$

Economic profit is used for internal analysis and is not required for transparent disclosure.

Theories of profit:

- ❖ Marginal productivity theory
- ❖ Risk-bearing theory
- ❖ Uncertainty-bearing theory

Lecture 14 - National income, Concept of National Income, Meaning, and Importance Circular flow, Accounting and approaches to Measurement and Difficulties

National Income- Meaning:

“Simon Kuznets” was an American economist and statistician who received the 1971 Nobel Memorial Prize in Economic Sciences *"for his empirically founded interpretation of economic growth which has led to new and deepened insight into the economic and social structure and process of development."* The net output of commodities and services flowing during the year from the productive system to the hands of ultimate consumers

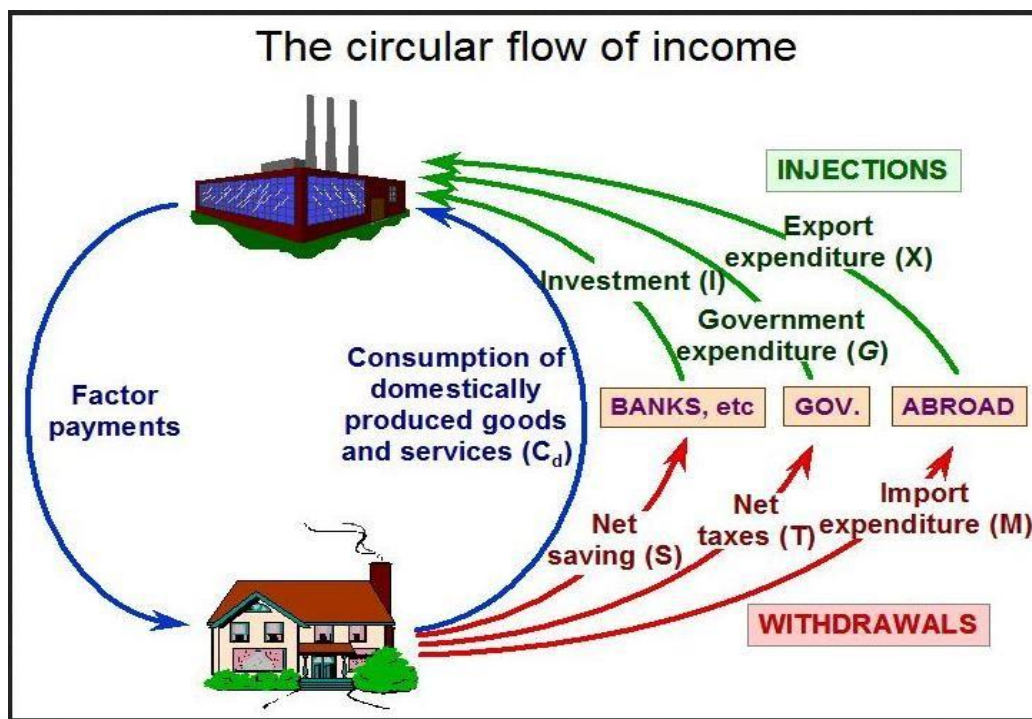
National Income- Importance:

1. Economic Policy
2. Economic Planning
3. Economy's Structure
4. Inflationary and Deflationary Gaps
5. Budgetary Policies
6. National Expenditure
7. Distribution of Grants-in-aid
8. Standard of living comparison
9. International sphere
10. Defense and Development
11. Role of the public sector

Concepts of NI:

1. Gross National Product (GNP).
2. Net National Product (NNP) AT MARKET PRICES
3. Net National Product (NNP) AT FACTOR COST /National Income.
4. Gross Domestic Product (GDP).
5. Private income

6. Personal Income.
7. Disposable Personal Income.
8. Real income
9. Per capita income



Gross National Product (GNP): "The total money value of all final goods and services produced by the residents of a country in one year period".

$$\text{GNP} = C + I + G + (X - M)$$

Net National Product (NNP): (at market prices) is the net market monetary value of all the final goods and services produced in a country during a year.

$$\text{NNP} = \text{GNP at Market Price} - \text{Depreciation}$$

Gross Domestic Product (GDP): Gross Domestic Product is the total market value at current prices of all final goods and services produced within a year by the factors of production located within a country.

$$\text{GDP} = \text{GNP} - \text{Net Foreign Income from Abroad}$$

Net National Product (NNP): (at factor cost)

Net National Product (NNP): (at market prices-indirect taxes+ subsidies National income

National income (NI): national income at factor cost is the aggregate earning of the four factors of production (land, labor, capital, and organization) which arise from the current production of goods and services by the nation's economy".

National income thus is the total of all income payments made to the factors of production.

Private Income: includes all income that is received by all individuals in a year.

$$\text{PI} = \text{NI} + \text{Transfer Payments (unemployment allowance and pension)} + \text{Interest on public debt} - \text{Corporate retained earnings-social security (Provident fund and life insurance)}$$

Personal income: Private income- Undistributed corporate profit

Disposable Personal Income: It is the amount that is left with the households after paying personal taxes such as income tax, property tax, national insurance contributions

$$\begin{aligned} \text{Disposable personal income} &= \text{Personal Income} - \text{Personal Taxes} \\ \text{Disposable Income} &= \text{Consumption} + \text{Saving} \end{aligned}$$

Real income- National income expressed in terms of the general price level of a particular year

Per capita income= National income/ Population

Methods of Computing National Income:

1. The Income Method
2. The Expenditure Method
3. The Product Method
4. Value-added method

1. Income Method:

National Income is the sum of all income, wages, rents, interest and profit paid to the four factors of production

Wages: It is the largest component of national income. It consists of wages and salaries along with fringe benefits and unemployment insurance.

Rents: Rents are the income properly received by households.

Interest: Interest is the income private businesses pay to households who have lent the business money.

Profits: Profits are normally divided into two categories,

- (a) profits of incorporated businesses
- (b) profits of unincorporated businesses (sole proprietorship, partnerships and producers' cooperatives).

2. Expenditure Method:

The expenditure approach measures national income as total spending on final goods and services produced within the nation during a year.

Consumption expenditure (C): Consumption expenditure is the largest component of national income. It includes expenditure on all goods and services produced and sold to the final consumer during the year.

Investment expenditure (I): Investment is the use of today's resources to expand tomorrow's production or consumption. Investment expenditure is expenditure incurred by business firms,

- (a). new plants,
- (b). adding to the stock of inventories
- (c). newly constructed houses.

Government expenditure (G): It is the second largest component of national income. It includes all government expenditure on currently produced goods and services but excludes transfer payments while computing national income.

Net exports (X - M): Net exports are defined as total exports minus total imports. National income calculated from the expenditure side is the sum of final consumption expenditure, expenditure by businesses on plants, government spending and net exports.

3. Product Method:

Goods and services are counted in the gross domestic product (GDP) at their market Values.

1. Agriculture
2. Manufacturing
3. Construction

4. Transport and communication
5. Banking
6. Administration and defense and
7. Distribution of income.

4. Value-Added Method:

Difference between the value of material output and input for all industries

Difficulties in measurement:

- ❖ Difficulties of defining nation in national income
- ❖ Measured in money
- ❖ Problem of double counting- a final and intermediate product
- ❖ Income earned from illegal activities excluded
- ❖ Inclusion of transfer payment- pension, unemployment allowance, interest on public loan
- ❖ Capital gains or losses due to an increase or decrease in the market value of assets excluded
- ❖ Evaluation of inventory changes
- ❖ Measuring depreciation in NNP
- ❖ The difficulty of price changes- use real income
- ❖ Estimation of public services- Police, military, irrigation, and power

Lecture 15 - Population: Importance of Malthusian and optimum population theories Natural and socio-economic determinants, Current policies and programs on population control

Importance:

1. The total number of people living in a particular area at a particular time is known as the population.
2. The population is one of the important factors which helps to balance the environment, the population should balance with the means and resources.
3. We cannot have a sustainable planet without stabilizing the population.
4. As human populations grow, human demands for resources like water, land, trees, and energy also grow.
5. Any truly meaningful conservation and sustainability efforts must consider the expanding human population footprint.
6. Globally, over 228,000 people are added every day — each needs sufficient land, water, shelter, food, and energy for a decent life.

In the 21st century, working on the population issue means working against oppressive cultural practices such as the low status of women around the world, gender-based violence, genital mutilation, forced prostitution, and child marriage. It means supporting girls' education and reproductive health.

Malthusian Theory:

Thomas Robert Malthus, an English cleric, and scholar published this theory in his 1798 writings, An Essay on the “**Principle of Population**”.

“The Malthusian Theory of Population is a theory of exponential (Geometric) population growth and arithmetic food supply growth”.

Population Control:

Malthus then argued that because there will be a higher population than the availability of food, many people will die from the shortage of food.

These checks would lead to the Malthusian catastrophe, which would bring the population level back to a 'sustainable level'.

1. **Positive Checks or Natural Checks:** Natural disasters such as floods and earthquakes and man-made actions such as wars and famines.
2. **Preventative Checks:** Family planning, late marriages,

Optimum Population Theory:

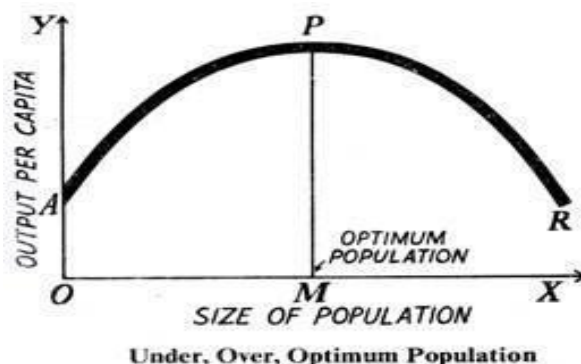
Edwin Cannan and *Carr-Saunders* of the London School of Economics have developed a new theory known as the Optimum Theory of Population.

“Given the natural resources, stock of capital, and the state of technical knowledge, there will be a definite size of the population with the per capita income. *The population which has the highest per capita income is known as the optimum population*”.

The optimum theory is based on two important assumptions:

The proportion of the working population to the total population remains constant as the population of the country increases.

As the population of a country increases, the natural resources, the capital stock, and the state of technology remain unchanged.



$$M = \frac{A - O}{O}$$

where :

- M — Maladjustment or deviation from optimum population.
- A — Actual population
- O — Optimum population

Natural and socio-economic determinants:

1. High fertility rates have historically been strongly correlated with poverty,
2. High childhood mortality rates, low status and educational levels of women,
3. Deficiencies in reproductive health services, and
4. Inadequate availability and acceptance of contraceptives.

Three major factors that determine the change in the population of any country viz. **Fertility, Mortality and Migration.** Of these, migration is not a major determinant of population change in the Indian context. Social and economic factors, such as income, education, employment, community safety, and social support can significantly affect how well and how long we live. These factors affect our ability to make healthy choices, afford medical care and housing, manage stress, and more.

Current policies and programs on population control:

For the first time, National Population Policy was announced in 1976 to mount “a direct assault on the problem of numbers.

Its salient features were:

1. To raise the age of marriage for girls to 18 years and boys to 21 years.
2. To take special measures to raise the level of female education in all States.
3. Raising the monetary incentive to persons undergoing sterilization according to the number of children in the family.
4. Additional incentives to government employees undergoing sterilization, having up to two children.

As a result, the number of sterilizations rose from 9.40 lakh in 1973-74 to 82.60 lakh in 1976-77. But this was due to the adoption of compulsory sterilization by most State governments. Taking advantage of the emergency, many States resorted to unfair and coercive methods to sterilize people of all ages. This led to mass resentment and unrest among the people. As a result, family planning programs became unpopular.

New Population Policy in 1977:

1. Renaming the family planning program into a family welfare program.
2. Fixing the marriage age for girls at 18 years and boys at 21 years.
3. Making sterilization voluntary.
4. Including population education as part of the normal course of study.
5. The monetary incentive to those who go in for sterilization and tubectomy.
6. Private companies are to be exempted from corporate taxes if they popularize birth control measures among employees.
7. Use of media for spreading family planning in rural areas

This policy put an end to compulsory sterilization and emphasized voluntary sterilization. This slowed down the family planning program. As a result, the number of sterilizations fell from 82.6 lacks in 1976-77 to 9 lakhs in 1977- 78. The Sixth Plan laid down the long-term demographic goal of reducing the net reproduction rate (NRR) to 1 by 2000 by reducing the crude birth rate to 21, crude death rate to 9, infant mortality rate to less than 60 per 1000, and couple protection rate (CPR) to 60 percent.

1. The goal of attaining an NRR of 1 was revised to 2006-11 in the Seventh Plan by reducing the crude birth rate to 29, crude death rate to 10.4, infant mortality rate to 90 per 1000, and couple protection rate to 42 percent.
2. Further, the Seventh Plan emphasized the two-child family norm.
3. To achieve the goal of NRR of 1, the Eighth Plan extended it to the period 2011-16.
4. The targets laid down during the Plan were crude birth rate at 26, infant mortality at 70 per 1000, and couple protection rate at 56 percent.

It led to several new schemes for improving the quality and coverage of welfare services for women, children, and adolescents such as child survival, safe motherhood program, universal immunization program (UIP), and reproductive tract infections (RTI).

1. During the Ninth Plan, the earlier approach of using an NRR (Net Reproduction Rate) of 1.0 was changed to a Total Fertility Rate (TFR) of 2.1.
2. This level of TFR had been projected to be achieved by 2026 in the Plan.
3. Further, with increased RCH (Reproductive and Child Health), the targets laid down by the end of the Ninth Plan (2002) had been an infant mortality rate of 50 per 1000, a crude birth rate of 23, a total fertility rate of 2.6 and CPR of 60 percent.

National Population Policy (NPP) 2000:

1. The Immediate Objective:

The immediate objective is to address the unmet needs for contraception, health care infrastructure, and health personnel and to provide integrated service delivery for basic reproductive and child health care.

2. The Medium-Term Objective:

The medium-term objective is to bring the Total Fertility Rate (TFR) to replacement level by 2010 through the vigorous implementation of inter-sectorial operational strategies

3. The Long-Term Objective:

The long-term objective is to achieve a stable population by 2045 at a level consistent with the requirements of sustainable economic growth, social development, and environmental protection.

Targets:

- Achieve zero growth rate of the population by 2045.
- Reduce infant mortality rate of below 30 per thousand live births.

- Reduce maternal mortality ratio of below 100 per 1, 00,000 live births.
- Reduce birth rate to 21 per 1000 by 2010.
- Reduce total fertility rate (TFR) to 2.1 by 2010

Major Objectives set in the National Population Policy till the year 2010:

1. The 'total fertility rate' is to be reduced to 2.1.
2. The high-class birth control services had to be made available publically so that the standard of two children could be adopted.
3. The infant mortality rate had to be reduced to 30 per thousand.
4. The mother mortality rate had also to be reduced to below 100 per one lakh.
5. The late marriage of girls had to be encouraged.

The Population Control Bill, 2019 (or, Population Regulation Bill, 2019) is a proposed bill introduced in the Rajya Sabha in July 2019. The purpose of the bill is to control the population growth of India. The 2019 bill introduces penalties for couples not adhering to the two-child policy such as debarment from contesting in elections and ineligibility for government jobs

On 7 February 2020, the Constitution (Amendment) Bill, 2020 was proposed.

The 2020 bill proposes to introduce a two-child policy per couple and aims to incentivize its adoption through various measures such as educational benefits, taxation cuts, home loans, free healthcare, and better employment opportunities.

Lecture 16 - Barter system of exchange and its problems Evolution of Money: Meaning, and functions of money Classification of money-types Money supply, General price index Inflation and deflation, Banking- role, types, functions Credit creation policy.

Barter system of exchange and its problems:

1. Money was not used in the early history of man.
2. Exchanges were few since each family was self-sufficient
3. Whatever exchanges there were, they took the form of barter, that is, the exchange of goods for other goods.

The five problems found in the barter system:

1. Double Coincidence of Wants- Buying and selling
2. Lack of a Standard Unit of Account
3. Impossibility of Subdivision of Goods
4. Lack of Information
5. Production of Large and Very Costly Goods is not Feasible.

Evolution of money:

Money has evolved through different, stages according to the time, place, and circumstances.

Major stages through which money has evolved are,

- ❖ Commodity Money
- ❖ Metallic Money
- ❖ Paper Money
- ❖ Credit Money
- ❖ Plastic Money- Credit cards, debit cards, pre-paid balance cards, smart cards

Money- Meaning:

Walker: Money is what money does

1. Generally acceptable.

2. Could be used to measure the values of goods and services.
3. Could be used to store the values.

Functions of Money Primary Functions:

1. Money as a Medium of Exchange
2. Money as a Measure of Value
3. Money as a Store of Value

Secondary Functions:

1. Money as a Standard of Deferred Payments
2. Money as a means of transferring value

Classification- Types of Money:

Legal banknotes: payment constituted by law

Bank money: banknotes, deposits, OD facilities

Standard money: reference value for all forms of money (a precious metal: generally, GOLD)

Paper money: bank notes, government notes

Token money: Official value is more than its metallic value.

Representative /Modern money:

Full Bodied Money: face value is equal to its real value

Representative Full-Bodied Money: lacking its value but backed by an equal amount of gold or silver

Credit Money or Fiat Money: face value is more than its intrinsic value Credit Money Issued by Govt. and Central Bank: Legal Money Credit Money Issued by Commercial Banks

Monetary instruments: Cheques, drafts, call deposit receipts and credit cards Plastic money, e-cash.

Near Money: Non-cash assets that are highly liquid and easily converted to cash.

Drafts and Bills of Exchange: domestic or international transactions Treasury Bills: govt. wants to borrow from the public

Bonds: The written form of loans

Equity Shares: Stock exchanges sell or purchase shares

Fixed and Saving Deposits: savings for some time Saving

Certificates: NSS, Saving Schemes

The traveler's cheques, insurance policies, savings of general provident fund, prize bonds, and money order.

Money Supply:

The total amount of money in the economy

M1- Current and demand deposits

M2 - M1+ Post office saving deposits

M3 - M1+ time deposits- Empirical measure of money supply in India

M4 - M3 + Post office saving deposits

Price Index:

Price Index = $P_t / P_0 \times 100$

Consumer Price Index, Wholesale Price Index

Inflation:

Coulborn: Too much money chasing too few goods

Ackley: Persistent and appreciable rise in the general price level

Causes:

Increase in demand: Increase in money supply, disposable income, speculation, salaries, wages, DA, population [Demand pull inflation]

The decline in supply: decrease in production, factors, increase in hoarding [Costpush inflation]

Exports-Imports: higher export and import prices

Types of Inflation:

1. Creeping inflation: < 2%
2. Walking inflation: 8 – 10%
3. Trotting inflation: 2-50%
4. Running inflation: 10-50%
5. Galloping / Hyperinflation >50%
6. Ratchet inflation: never come down

Concepts of Inflation

Inflationary gap: Money income – available supply of goods and services

Suppressed inflation: Deliberate government purchase to prevent price rise

Deflation: Opposite to inflation, an extraordinary fall in prices and money income

Reflation: a moderate degree of controlled inflation

Stagflation: Inflation and stagnation are prevailing side by side

Deflation:

1. Reduction of the general level of prices in an economy.
2. When consumer and asset prices decrease over time and purchasing power increases.
3. Essentially, you can buy more goods or services tomorrow with the same amount of money you have today.
4. This is the mirror image of inflation, which is the gradual increase in prices across the economy.

Banking

Role (Functions) of Banks:

1. Banks collect the savings of the individuals
2. lend them out to businesses- people and manufacturers
3. Bank loans facilitate commerce
4. The banking system can create money
5. The banking system facilitates internal and international trade.
6. banks act as advisers, counselors, and agents of business and industrial organizations

Types of Banks:

1. **Central bank:** RBI
2. **Commercial banks:** SBI, BoB, TMB
3. **Development banks:** IDBI, NABARD
4. **Co-operative banks:** PACS, DCCB, SCB
5. **Land development banks:** Primary Co-operative Agriculture and Rural Development Banks & SCARDBs
6. **Merchant banks:** Private banks: Kotak, Mahindra
7. **Foreign banks:** Citi, HSBC, BoA

Functions of Central Bank Major functions of the RBI:

- a. Issue of Bank Notes
- b. Banker to Government
- c. Custodian of Cash Reserves of Commercial Banks
- d. Custodian of the Country's Foreign Currency Reserves
- e. Lender of Last Resort
- f. Central Clearance and Accounts Settlement
- g. Controller of Credit

Credit creation policy:

1. In simple terms, credit creation is the expansion of deposits.
2. The loan is credited to the account of the borrower.
3. Every bank loan creates an equivalent deposit in the bank.
4. Therefore, credit creation means the expansion of bank deposits.
5. And, banks can expand their demand deposits as a multiple of their cash reserves because demand deposits serve as the principal medium of exchange.
6. The various methods employed by the RBI to control the credit creation power of commercial banks can be classified into two groups, viz., quantitative controls and qualitative controls.
7. Quantitative or traditional methods of credit control include the bank's rate policy, open market operations, and variable reserve ratio.
8. Qualitative or selective methods of credit control include regulation of margin requirement, credit rationing, regulation of consumer credit, and direct action.

Lecture 17 - Agricultural and public finance: Microfinance vs Macro finance, Need of agricultural Finance, Public Revenue and Public Expenditure, Tax: Meaning, Direct and Indirect Tax, Agricultural Taxation, VAT and GST, Economic system: Concept of the economy and its functions, Important character of Capitalistic, Socialistic and Mixed economy, Elements of economic planning.

Meaning:

Agricultural finance refers to financial services ranging from short-, medium- and long-term loans, to leasing, to crop and livestock insurance, covering the entire agricultural value chain - input supply, production and distribution, wholesaling, processing and marketing.

Public finance is the study of the role of the government in the economy. It is the branch of economics that assesses the government revenue and government expenditure of the public authorities and the adjustment of one or the other to achieve desirable effects and avoid undesirable ones.

	Microfinance	Macro finance
Meaning	Microfinance is an individual-based concept to furnish financial services to low-income individuals who have no access to finance conventionally.	Macrofinance is a whole economy-based concept not framed for any particular group to grow the economy at a national level.
Concept	Microfinance is a narrow concept and focuses on the need of an individual.	Macro finance is a broad concept and focuses on the whole nation.
By whom	Microfinance is provided by microfinance companies, self-help groups, and non-government organizations.	A macro-finance involves large entities like governments, big corporations, banks, and some big private lenders.
Money involved	In microfinance, the money involved is a small amount.	The amount of money involved is a large portion.

Period	Microfinance is an endless activity that goes on and on.	A macro-finance is for a specific period like 2 years or 3 years. It means it has a predefined tenure.
Risk level	In microfinance, there is a risk of default that an individual may not pay.	There is no risk at all because the main aim is to give benefit the economy.
Effect	Microfinance has a direct effect on an individual.	A macro-finance directly affects the whole economy and indirectly affects the whole population.

Need for agricultural finance

1. The scope for extensive agriculture in India is limited. Therefore, an increase in agricultural production is possible only by intensification and diversification of farming. Intensive agriculture needs huge capital.
2. The purchasing power of the small and marginal farmers is limited to their subsistence farming. Hence, they have to depend on external financial assistance to use the costlier (modern) inputs.
3. Farmers' economic condition is subject to a frequent onslaught of floods, drought, and famine. Therefore, either the continuance of the cultivation of crops or making improvements on the farms depends on the nature and availability of finance.
4. In recent years, more area is brought under irrigation which in turn would increase the use of inputs like fertilizer and plant protection chemicals. To accomplish this, external finance is needed
5. To sustain the development of agro-based industries, there should be a substantial increase in the supply of raw materials needed for such industries.
6. In agriculture, fixed capital is locked up in permanent investments like land, well, and buildings. Moreover, it takes a long time to get returns from the farm. Hence, farmers need finance to continue their farm operations.

7. The weaker sections of the farming community should be motivated to participate in development programs by giving financial assistance to acquire productive assets.
8. Small and marginal farmers are trapped in the vicious cycle of poverty i.e., low returns → low saving → low investment → low return. To break this cycle, credit has to be injected into the agricultural sector.

Public Revenue:

Direct Tax: Income tax, wealth tax and expenditure tax

Indirect tax: custom duties, excise duties, sales tax and service tax

Non-tax: receipts, fees, special assessment, fines, forfeitures and escheats, tributes and indemnities, Loans.

Public Expenditure:

Public expenditure is spending made by the government of a country on collective needs and wants such as pensions, provisions, and infrastructure.

Principles

1. Principles of maximum social benefit
2. Principle of Economy
3. Principle of sanction
4. Principle of elasticity

Taxes & Taxation

- ❖ Tax is the compulsory contribution made by a citizen to the government for common benefits.
- ❖ Compulsory Common expenses
- ❖ For specific facilities rendered.

Direct Vs Indirect Tax:

Direct Tax	Indirect Tax
Progressive in nature and based on the ability to pay	Regressive in nature
Convenient to the taxpayer	Uncertain
Helps in reducing inflation	Causes rise in prices
East to collect	Uneconomical

Cannons / Principles of Taxation:

- Canon of equality
- Canon of certainty
- Canon of Convenience
- Canon of economy
- Canon of Productivity
- Canon of elasticity
- Canon of simplicity
- Canon of variety
- Canon of flexibility

Types of taxes:

1. Proportional tax
2. Progressive tax
3. Regressive tax
4. Degressive tax

1. Proportional tax:

Tax according to income ex. 10% of income. It is simple and does not change the level of distribution of wealth. Poor people will be affected.

2. Progressive tax:

Tax is distributed in a more justified manner. People with higher income are charged higher rates (eg) income tax.

3. Regressive tax:

Taxes are charged to the poor at a higher rate than the rich. This is a bad principle and generally avoided as far as possible (to motivate the poor to earn more, it is proposed).

4. Digressive tax:

Tax increases as the income increases but the rate does not increase in the same proportion as the income increase. For the developing economy to accelerate the growth of the economy.

Agricultural Taxation:

By default, agricultural income is exempted from taxation and not included under total income. The Central Government can't impose or levy tax on agricultural income. The exemption clause is mentioned under Section 10 (1) of the Income Tax Act of India. However, state governments can charge agricultural tax. As of the latest amendment, income from agriculture, if within INR 5000 in a financial year, will not be accounted for tax purposes. Anything above that will be taxable as per the applicable rates.

Value Added Tax (VAT):

- ❖ VAT was introduced value-added tax (VAT) into the Indian taxation system on 1 April 2005. The existing general sales tax laws were replaced with the Value Added Tax Act (2005) and associated VAT rules.
- ❖ A value-added tax (VAT) is a consumption tax placed on a product whenever value is added at each stage of the supply chain, from production to the point of sale.
- ❖ The amount of VAT that the user pays is on the cost of the product, less any of the costs of materials used in the product that has already been taxed.
- ❖ VAT is a multi-point sales tax.

Goods and Service Tax (GST):

- ❖ GST is an Indirect Tax that has replaced many Indirect Taxes in India.
- ❖ The Goods and Service Tax Act was passed in Parliament on 29th March 2017. The Act came into effect on 1st July 2017;
- ❖ Goods & Services Tax Law in India is a comprehensive, multi-stage, destination-based tax that is levied on every value addition.
- ❖ GST is one indirect tax for the entire country.

Components of GST:

CGST: Collected by the Central Government on an intra-state sale (Eg: A transaction happening within Tamil Nadu)

SGST: Collected by the State Government on an intra-state sale (Eg: transaction happening within Tamil Nadu)

IGST: Collected by the Central Government for inter-state sale (Eg: Maharashtra to Tamil Nadu)

Fertilizers an important element of agriculture were previously taxed at 6% (1% Excise + 5% VAT). In the GST regime, the tax on fertilizers has been increased to 12%. The same impact is on Tractors. The waiver on the manufacture of Tractors is removed and a GST of 12% has been imposed.

Economic systems:

An economy is a large set of interrelated production, consumption, and exchange activities that aid in determining how scarce resources are allocated. The production, consumption, and distribution of goods and services are used to fulfill the needs of those living and operating within the economy, which is also referred to as an economic system. Production, consumption and growth are the essential functions of economies.

There are three types of economic systems viz.,

i). Capitalism

ii). Socialism

iii). Mixed economy.

i). Capitalism:

It is a very simple system. The government does not play an important role. Private entrepreneurs play an important role. Private people own property, wealth, and capital. They utilize resources to earn maximum profit. No licensing, or permits. This is called a free-market economy or market system or laissez faire system.

Characteristics

1. The right of private property – Individuals can acquire the property, use it and dispose of it freely.
2. The right of inheritance – It means that individuals can transfer the property of their heirs.
3. The right of free enterprise – Free to choose goods and produce the goods.
4. Competition – Based on the number of buyers and sellers, it exists.
5. Profit motive – To make profit traders compete.
6. Price mechanism – It is important. It is guided by the price for exchange.
7. Role of Government – The main role of the Government is to maintain the stability of the economy from outside forces.

ii). Socialism:

1. It is different from capitalism.
2. In this system, the state or Government owns all the properties, wealth, and capital. They plan for the entire country.
3. Individuals are not permitted to own property.
4. The prime principle is social welfare. Not profit making.
5. The Government takes all the decisions. There is no competition. There is no exploitation and economic equality is achieved.
6. Economic problems are solved by proper planning by the Central authority. They plan for the production, distribution, use of resources, etc.

Disadvantage:

There may be inefficient management by the Government employees. Individual interest in innovation is arrested. There is no freedom for consumers.

iii). Mixed economy:

1. It is a combination of capitalism and socialism. It is an attempt to exploit the advantages of both. Private entrepreneurs exist. State-owned Public Sector enterprises or undertakings (PSUs) also exist.
2. Entrepreneurs are free to select the products and resources in the production process.
3. Here Government plays the role of a watchdog. If the resources are diverted and not used properly Government will interfere.
4. It is defined as a system in which both the public sector and private sector are permitted to play their role in the promotion of the economy.
5. Economic problems are solved by these enterprises.
6. Based on market forces private enterprises make decisions while public sector enterprises function based on public welfare.

Elements of economic planning in India:

- ❖ Economic growth,
- ❖ Poverty reduction,
- ❖ Modernization of the economy,
- ❖ Increase in employment,
- ❖ Reduction in income inequality